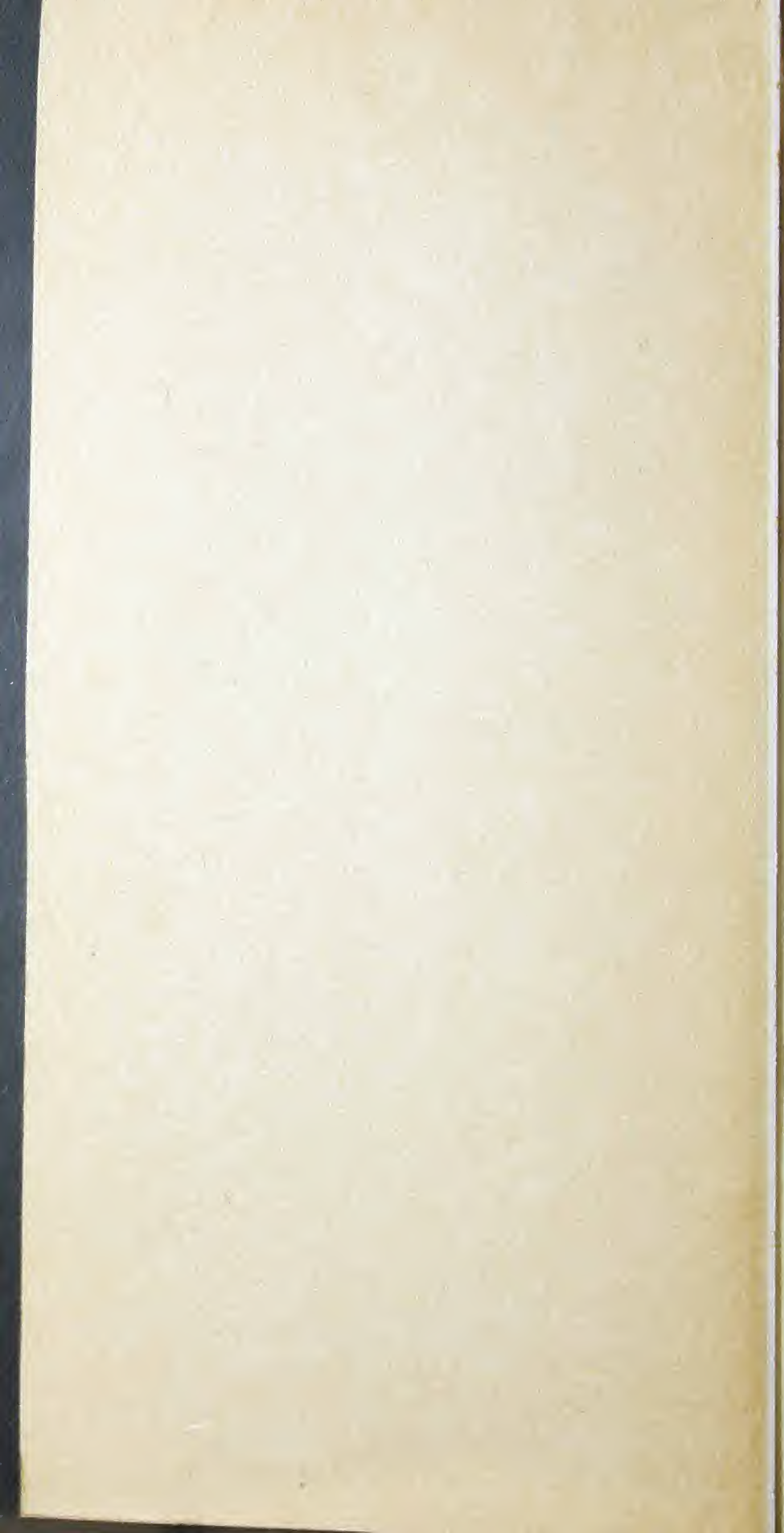


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IRVING SUBWAY
(PATENTED) TRADE MARK
THE FIREPROOF VENTILATING FLOORING

IRVING IRON WORKS CO.
LONG ISLAND CITY, N.Y., U.S.A.

THE FRANKLIN INSTITUTE



IRVING SUBWAY
(PATENTED) TRADE MARK
THE FIREPROOF VENTILATING FLOORING

For every architectural, industrial and marine purpose where the advantages of a fireproof metallic flooring are sought, in combination with maximum lighting and ventilation capacity, and minimum weight.

Catalog 2A

IRVING IRON WORKS CO.
LONG ISLAND CITY, N.Y., U.S.A.

Irving Subway is the first grating ever MANUFACTURED. Other gratings have been BUILT—and most of them are BUILT today.

MANUFACTURING grating means:—quantity purchase of materials, at low cost; machine methods, at low cost; uniform high quality, at low cost; biggest value per dollar of price.

BUILDING grating means:—small purchases of materials, at high price; slow hand methods, at high cost; variable quantity, no two panels alike; low value per dollar of price.

Irving Subway gives you the utmost in service at the lowest cost per unit of service.

Irving Iron Works, Long Island City, N. Y.

Irving Subway came into being with the coming of underground transit systems in America. This brought the first demand for gratings in large quantities. And Irving Subway—the superiority of which was already recognized—was called for in such large orders as to justify the design and installation of special machinery for quantity production.

Thus, Irving Subway was the first grating ever manufactured on a quantity and quality basis. And though the large demands for it which came from the subway systems have long since been supplied, the unquestioned merits of Irving Subway as a fireproof ventilating flooring and grating, have opened up new markets in the architectural, industrial and marine world which keep the Irving



A subway ventilation opening beside Bryant Park, New York, Forty-second Street, near Sixth Avenue. Typical of hundreds of Irving Subway installations in New York.

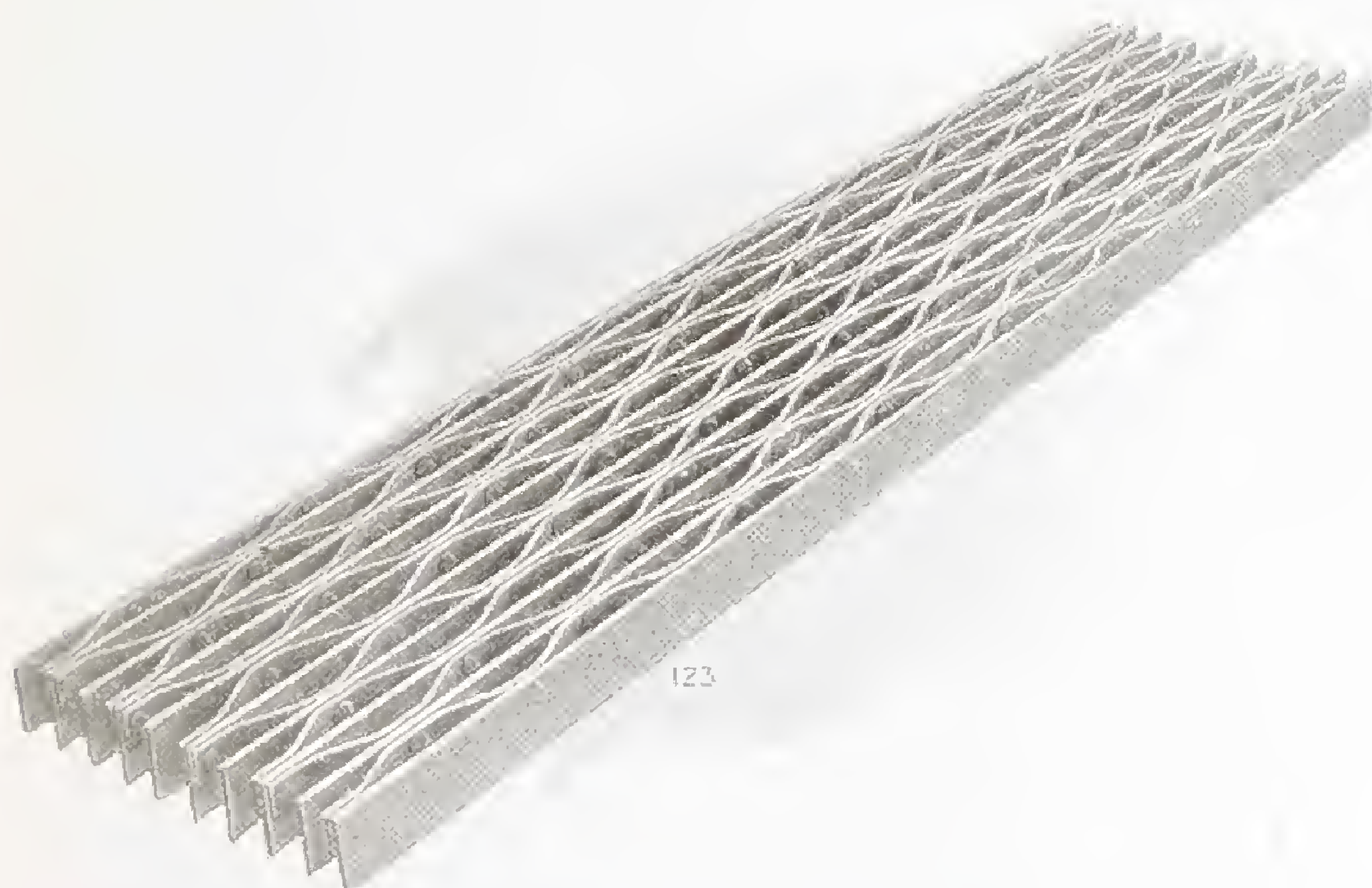
factory working to capacity. It has ceased to be a mere specialty with a limited field and has become an engineering product with a recognized place in the construction world.

Construction

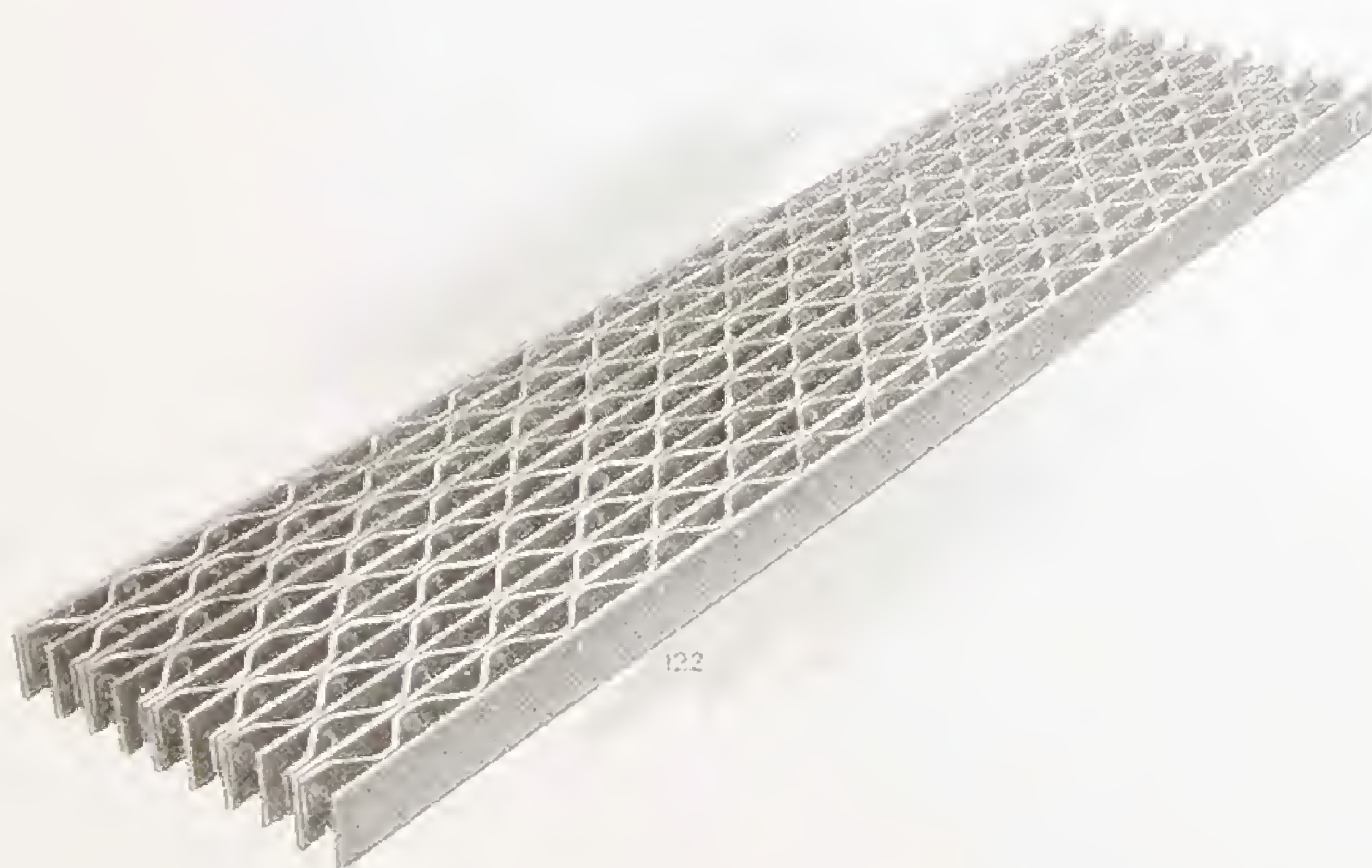
Irving Subway consists of a series of light steel bars placed on edge, between each pair of which a reticuline bar is placed and firmly riveted in position. The finished section is a light but inflexible panel embodying the well-known truss principle of construction, by which a load applied at any point is at once distributed over a wide area. Maximum strength is thus secured with the minimum weight of material. When riveted up, each section of Irving Subway is, in all essentials, a solid unit in which there is, and can be, no looseness, no play, no rattling.

Types

There are two standard types of Irving Subway, differing in appearance and in price, but not in strength or general merit. In Type "G" the crimp of the reticuline bars is elongated, with a spacing of 7 inches between rivets, resulting in a panel with comparatively large openings—"open mesh," to use a common term. In Type "E" the crimp in the reticuline bars is shorter and rivet spacing $3\frac{1}{2}$ inches—resulting in a panel of smaller openings and "close mesh." The rated load capacity is the same for both Type "G" and "E." Choice between them in any case is to be determined by the factor of size of mesh.



Irving Subway, Type "G"



Irving Subway, Type "E"



See the flood of light admitted to this vault by the Irving Subway overhead. Think of the generous ventilation afforded.

Exclusive Advantages

Briefly summarized, Irving Subway offers the following exclusive advantages over any other form of grating or grating-flooring:—

Maximum strength per unit of weight.

Minimum weight per unit of load and span.

Uniform distribution of load by truss construction.

Minimum deflection per unit of load and span.

Maximum lighting and ventilation area (80% of panel area).

Absolutely non-slipping surface.

Cannot become loose and rattly.

Irving Iron Works, Long Island City, N. Y.

Oil or grease, ice or snow, age or wear, does not impair its non-slipping qualities.

Minimum lodgement for dirt or solid objects.

Small size of individual openings (mesh) prevents passage of tools, etc.

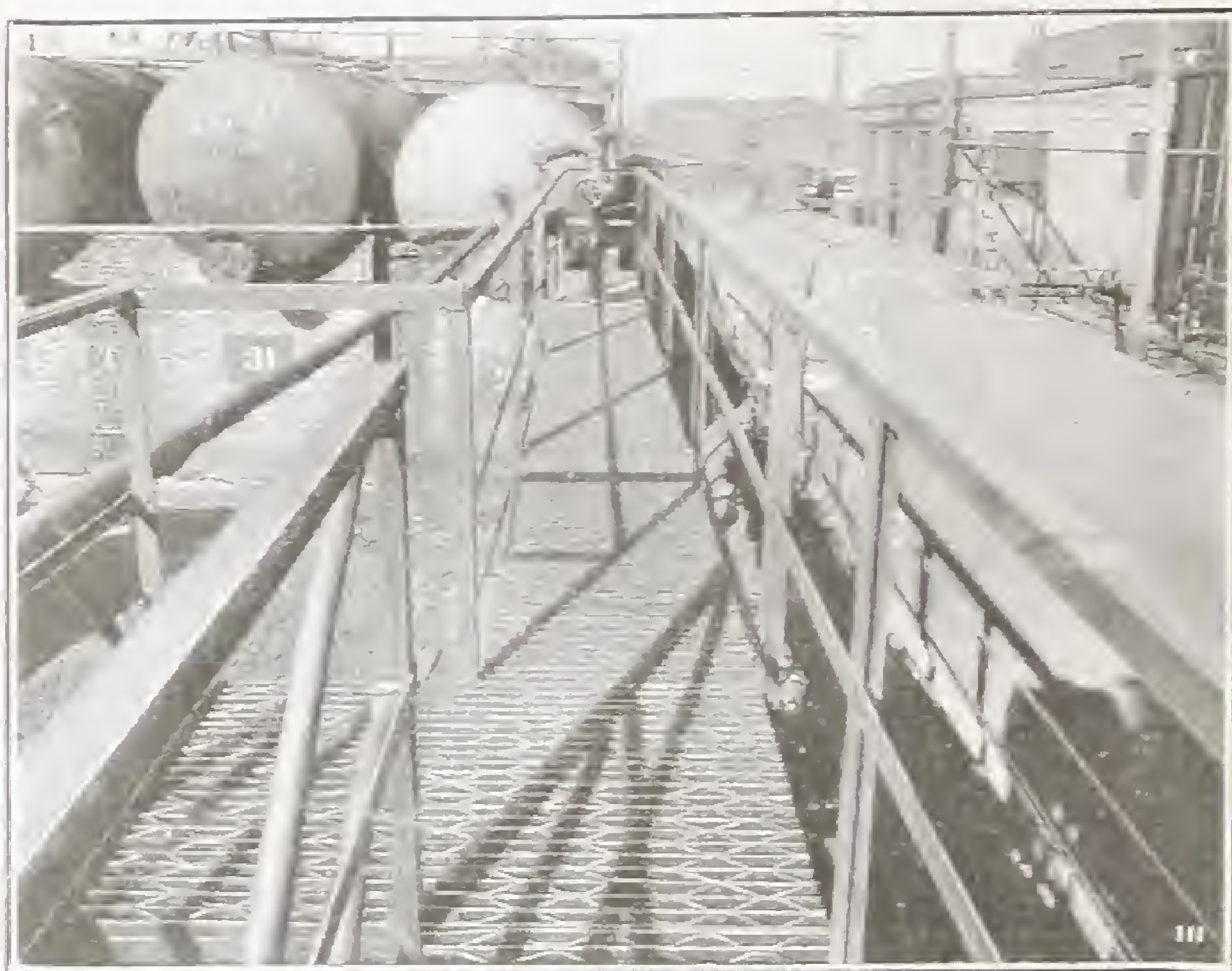
Wheels or rib-hooped barrels can be rolled over it in any direction without going through.

Its light weight means minimum weight and cost of the supporting structure.



A gallery of Irving Subway beside a big unit in a power plant.

Irving Iron Works, Long Island City, N. Y.



A car loading platform of Irving Subway in a chemical plant.

Safe, comfortable and noiseless to walk or work upon.

Safe to work under, because nothing large and heavy can fall through it.

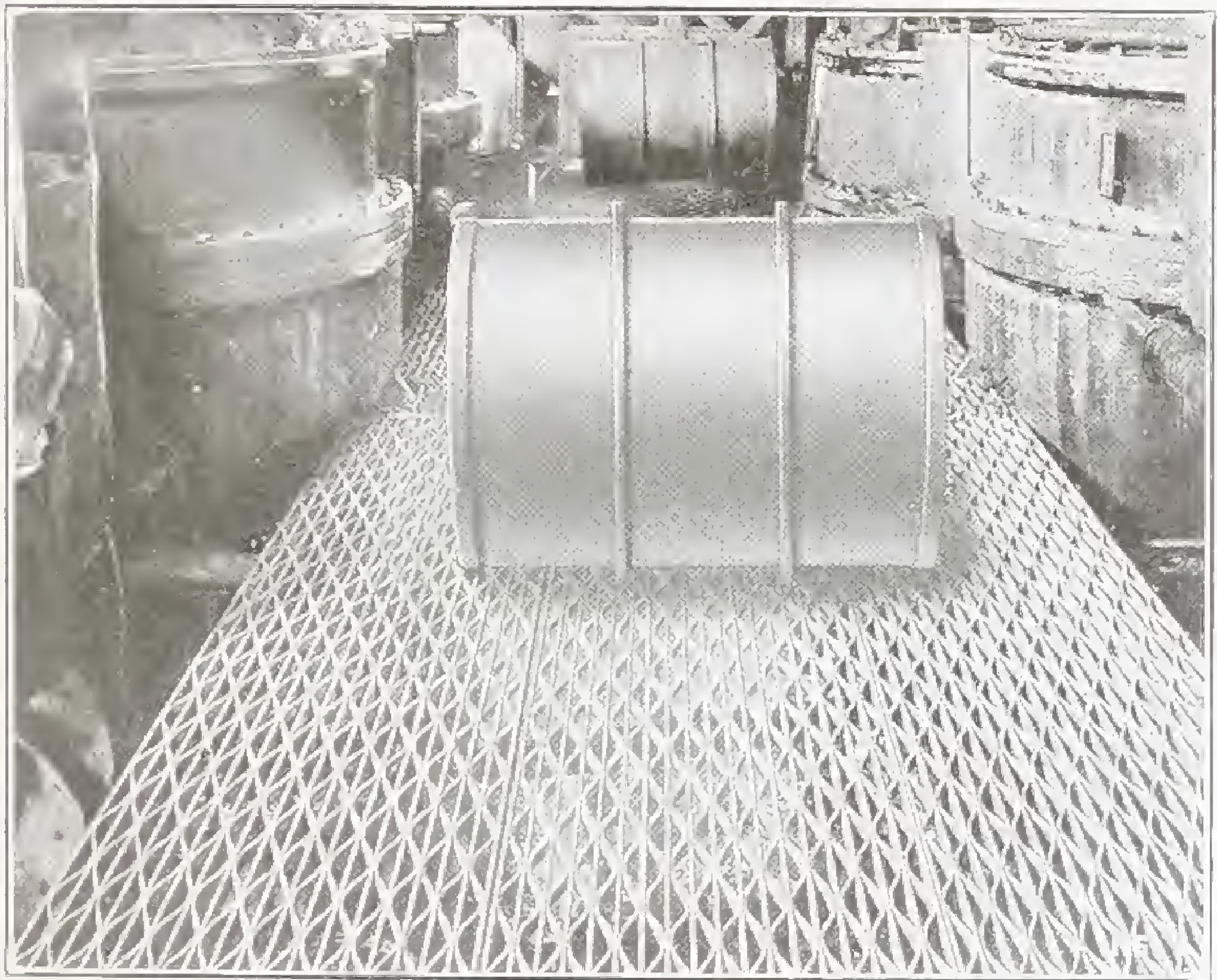
Openings for pipes, columns, etc., can be cut out without seriously impairing the strength of the panel.

Easily fitted into corners or formed in irregular shapes without impairment of strength.

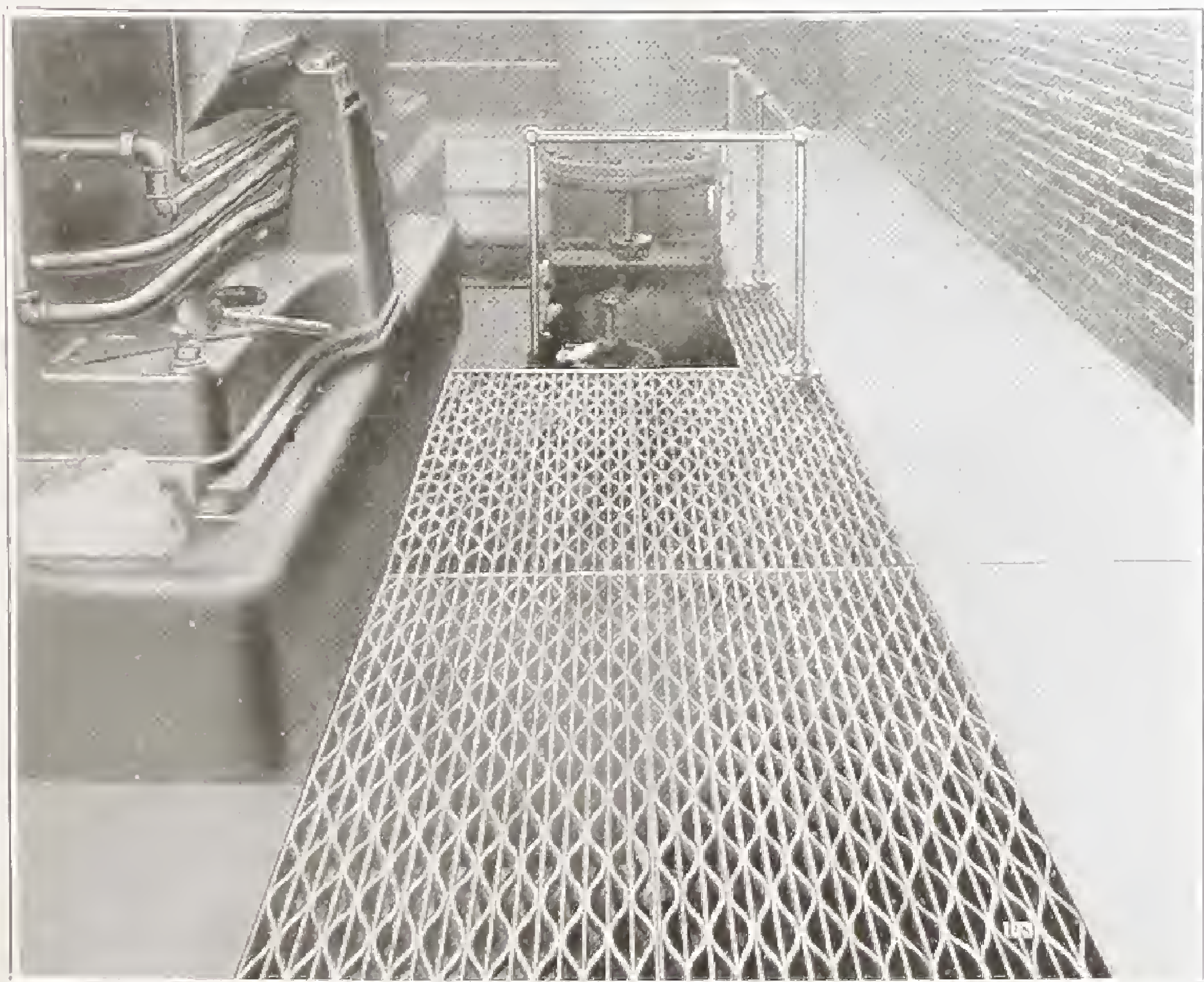
While affording maximum opening for lighting and ventilation, the depth of the bar members obstructs vision except when directly beneath.

Easily mounted or attached to any type of construction by means of specially devised fasteners—no drilling, no tapping, no bolts or screws needed.

Irving Iron Works, Long Island City, N. Y.

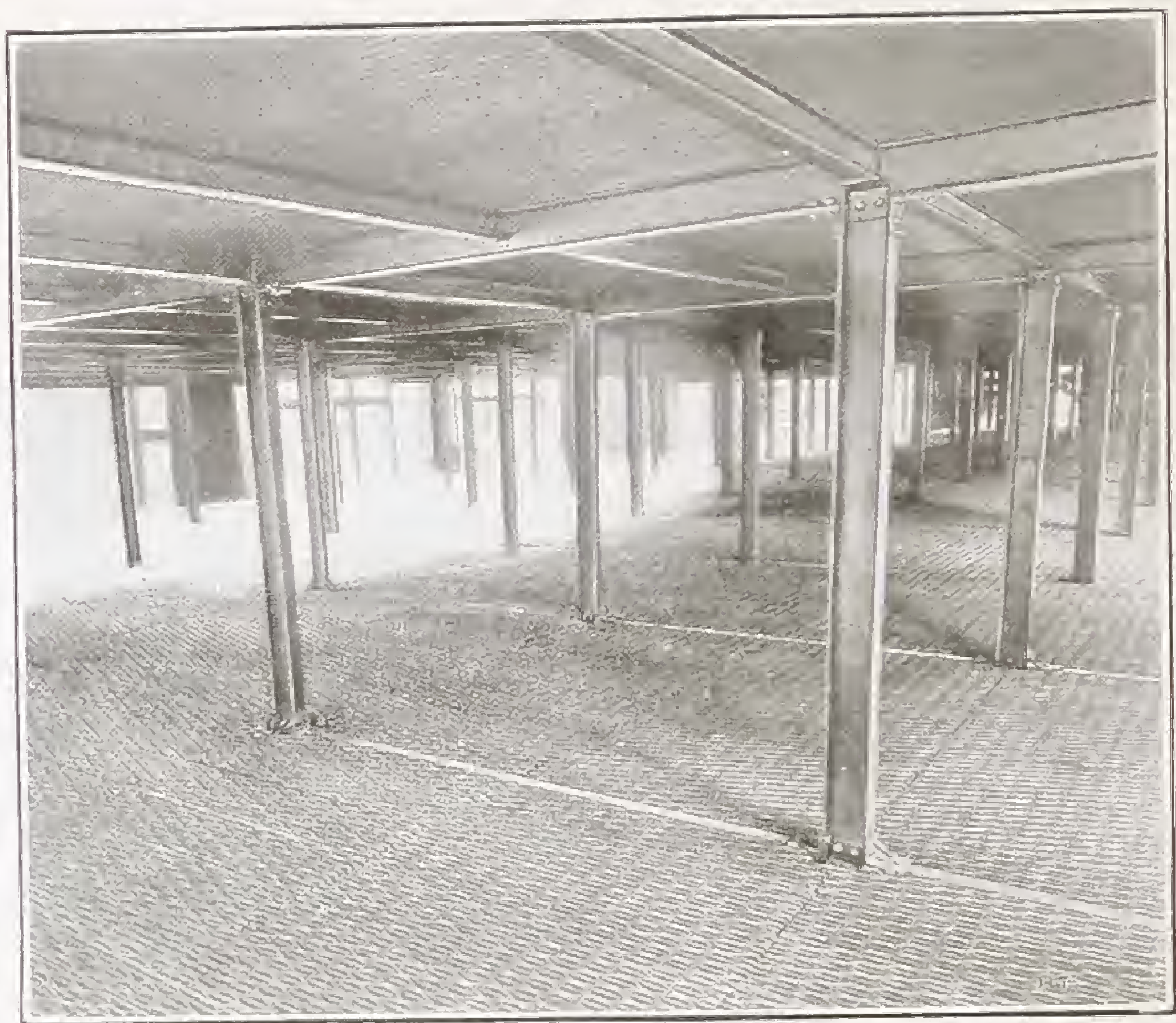


Rib-hooped barrels roll over Irving Subway as easily as over a smooth, solid floor.



Here Irving Subway is used over a pit in an engine room—a non-slipping surface to walk upon, light and air for the pit below.

Irving Iron Works, Long Island City, N. Y.



Acres of Irving Subway constitute the fireproof ventilating flooring in this big warehouse.

Applications in Building Equipment

Following the advent of Irving Subway as a standard fireproof ventilating flooring, architects were quick to recognize its possibilities even for purposes for which no other grating had ever been considered.

For covering areas in front of show windows—particularly those intended for the ladies' attention—the non-slipping and comfortable surface, and the close mesh, of Irving Subway have been found particularly attractive. Baby carriage wheels and French heels cannot go through or get caught.

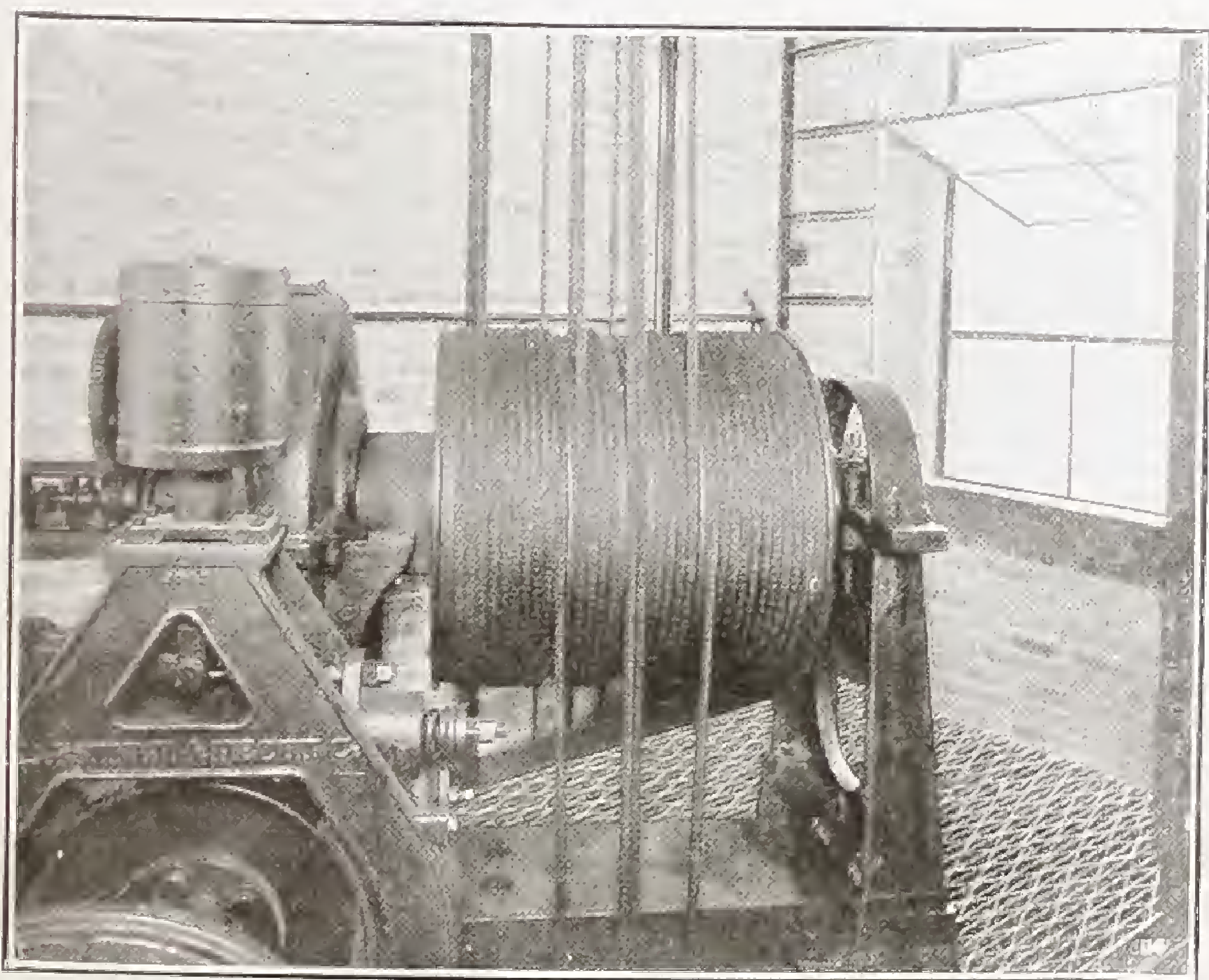
Used as parapet railings around the roofs of buildings, its close mesh gives the necessary seclusion from those “across

Irving Iron Works, Long Island City, N. Y.

the way” and affords an ornamental appearance with an effective impression of solidity when viewed from the street or at an angle.

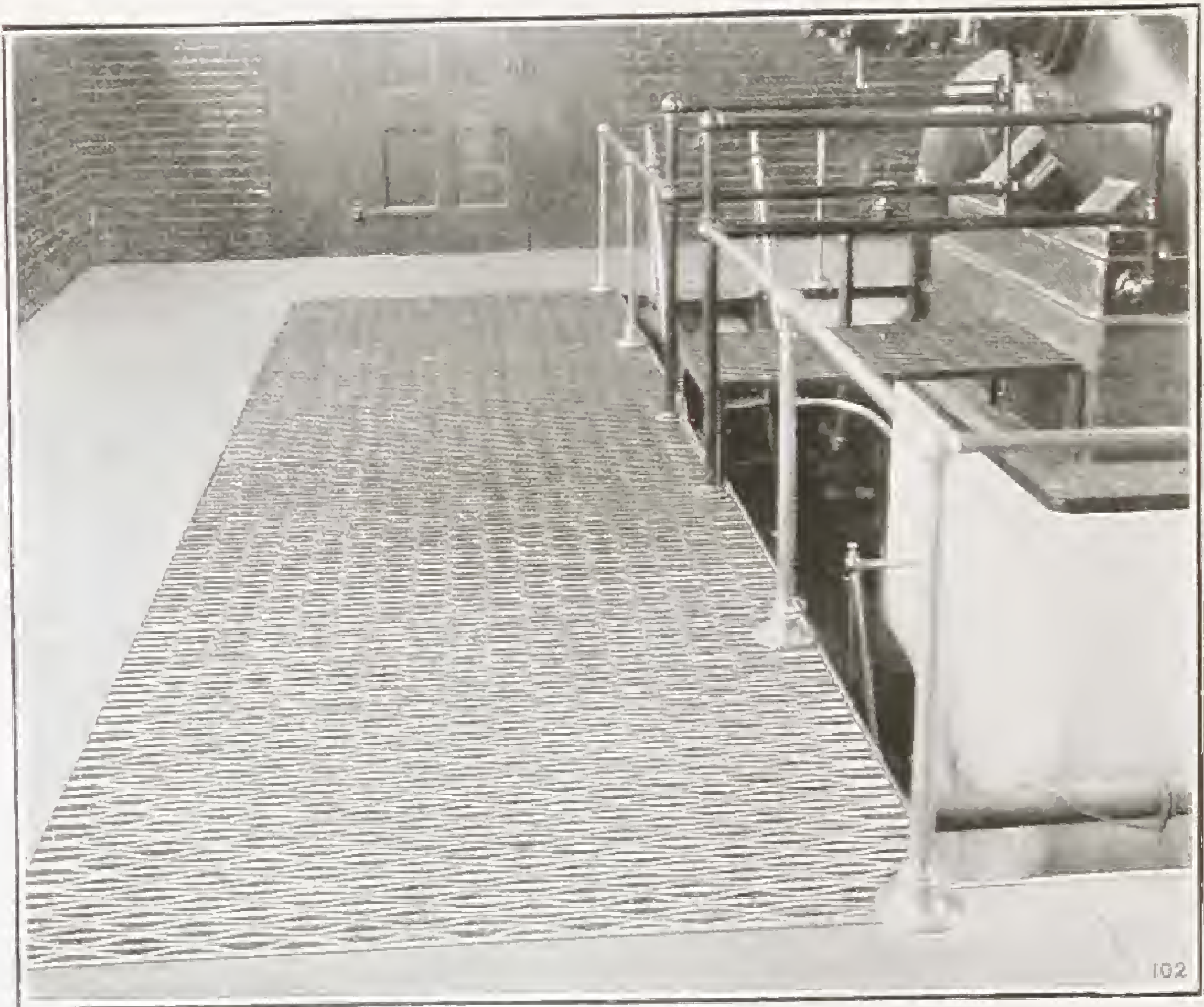
As a removable mat over a floor in laboratories or other places where sand or plaster might fall and be ground under foot and be tracked about, it offers peculiar advantages.

And other more obvious but no less important applications of Irving Subway are found in window guards, register openings, sidewalk doors, elevator gratings, ventilation shafts, stair steps, theatre gridirons, gallery flooring, hatchway coverings, armoring for concrete floors and platforms, etc.



An elevator penthouse floored with Irving Subway. Illustration furnished by courtesy of the National Safety Council.

Irving Iron Works, Long Island City, N. Y.



Light and air in plenty for the pit beneath this big pumping engine—and a safe footing for the men who work around it.

Some Representative Users

To list all the users of Irving Subway would go beyond the space limits of this book—and the list would be incomplete before the pages left the press. However, the service rendered by any product may best be judged by the character of the concerns that use it. And on pages 16 and 17 a partial list of users of Irving Subway is given, showing not only the great diversity of its industrial applications but also the nation-wide recognition which its merits have won.

To any inquirer in any line of business, the Company will be glad to furnish, on request, a list complete to date of Irving Subway installations in his own particular field of industry. One peculiarly

satisfactory feature of Irving business is the extent to which Irving Subway has been sold by the recommendations of its users. Another is the large number of repeat orders that have followed small initial installations.

Load Ratings, Spans, Etc.

On pages 18 and 19 are tabulated the safe load ratings of Irving Subway, for various spans—together with sizes of members and factors by means of which deflections under any contemplated load can be computed for any given span.



Near Herald Square, New York. With icy, slippery streets, Irving Subway is sought for the safe footing it affords.

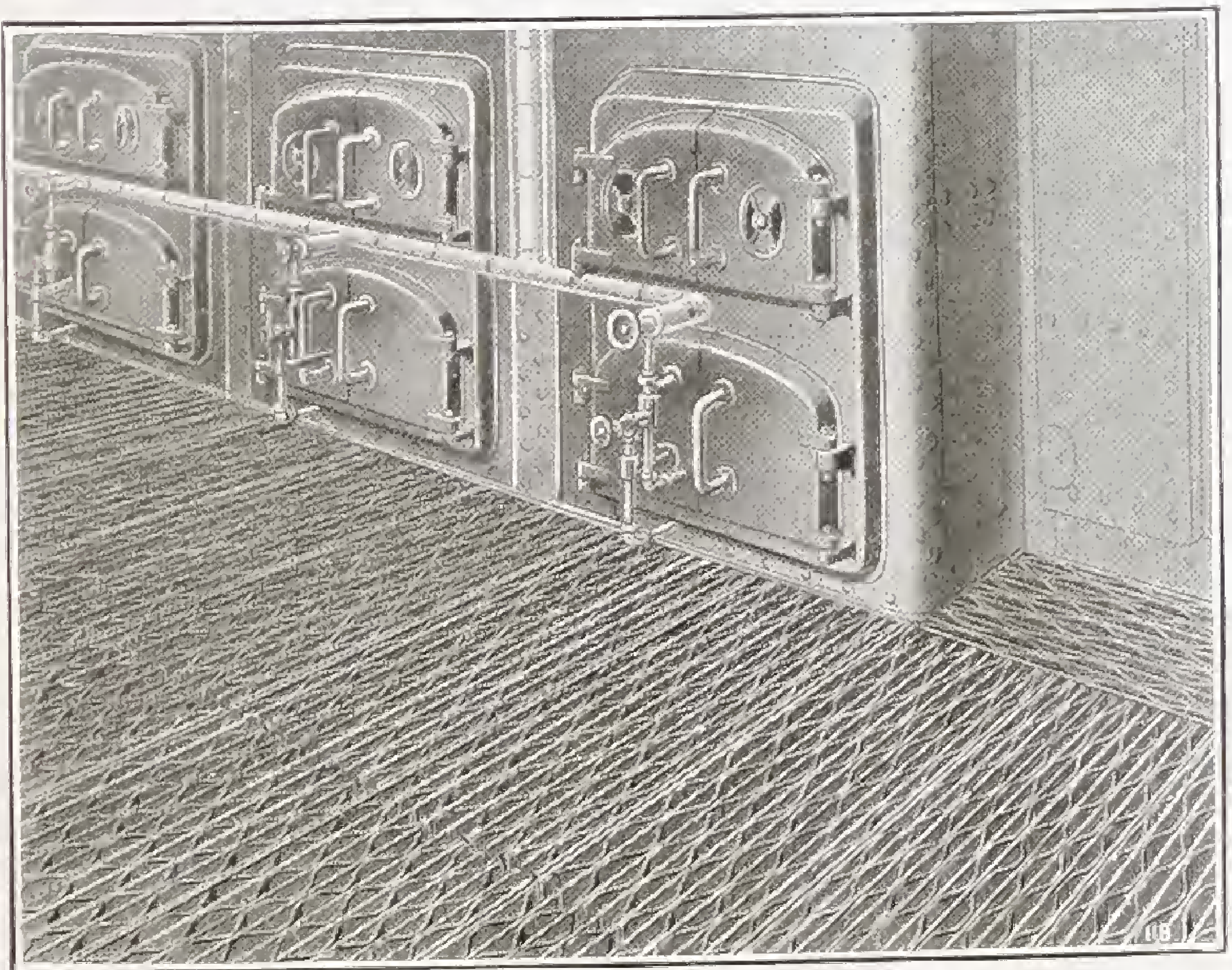
Irving Iron Works, Long Island City, N. Y.

SOME REPRESENTATIVE USERS OF
IRVING SUBWAY.

Aluminum Co. of America.
American Steel Wire Co.
American Sugar Refining Co.
American Locomotive Co.
American Smelting & Refining Co.
Boston Transit Co.
Byllesby, H. M., & Co.
Barrett Co.
Cramp, Wm., & Sons, Ship & Engine Bldg. Co.
Camaguey Electric Co. (Cuba)
Canadian-Niagara Power Co.
Carolina Power & Light Co.
Chicago, Milwaukee & St. Paul R. R.
Czarnikow-Rionda Co. (Honolulu).
Chili Exploration Co.
Du Pont, E. I., De Nemours Co.
Edison, Thomas A., Co.
East St. Louis Water Co.
Federal Sugar Refining Co.
Fleischman Co.
Fore River Shipbuilding Co.
Ford Motor Co.
Ford, Bacon & Davis
Foundation Co.
General Chemical Co.
Georgia Power & Light Co.
Greenfield Tap & Die Co.
Heppenstahl Forge & Knife Co.
Hyatt Roller Bearing Co.
Illinois Central Railroad Co.
International Nickel Co.
Interborough Rapid Transit Co.
Koppers, H., Co.
Linde Air Products Co.
Loft Candy Co.
Lehigh & Wilkesbarre Coal Co.
Mobile Shipbuilding Co.
Merchant Shipbuilding Co.
New Jersey Zinc Co.
New York Central Railroad Co.
Nebraska Gas & Electric Co.
Newport Turpentine & Resin Co.
Newport News S. B. & D. D. Co.
Ohio Match Co.
Oklahoma Pipe Line Co.
Prairie Pipe Line Co.
Pennsylvania R. R. Co.
Pennsylvania Salt Co.
Pathe Exchange
Pensacola Shipbuilding Co.

Irving Iron Works, Long Island City, N. Y.

Ray Consolidated Copper Co.
Riter-Conley Co.
Superior Coal Co.
Standard Oil Co.
Stone & Webster Engineering Corp.
Solvay Process Co.
Standard Oil Cloth Co.
Seaboard Chemical Co.
Susquehanna Coal Co.
Submarine Boat Corp.
Texas Co.
U. S. Navy Yards.
Union Bag & Paper Corp.
Virginia Power Co.
Western Electric Co., Chicago.
White, J. G., Management Corp.
Winchester Repeating Arms Co.
Whittaker Glessner
Wright Wire Co.
Westinghouse, Church, Kerr & Co.
Willard Storage Battery Co.
Yale & Towne Mfg. Co.
Youngstown Sheet & Tube Co.



A boiler room floor of Irving Subway in an oil-burning steamship.

Irving Iron Works, Long Island City, N. Y.

SAFE LOAD TABLE—ALL

L=Safe load in lbs. per sq. ft. D=Deflection in inches

SIZE, SYMBOL AND SPECIFICATIONS			2'-6"	3'-0"	3'-6"
Grating, $\frac{3}{4}$ " deep		L	250	173	127
Symbol, 1S					
Straight Bars,	$\frac{3}{4}" \times \frac{1}{8}"$	D	.17"	.25"	.34"
Reticuline "	$1\frac{1}{2}" \times \frac{1}{8}"$	C	.00069	.00143	.00265
Grating, 1" deep		L	445	308	227
Symbol, 2S					
Straight Bars,	1" $\times \frac{1}{8}"$	D	.129"	.186"	.254"
Reticuline "	$\frac{3}{4}" \times \frac{1}{8}"$	C	.00029	.00060	.00112
Grating, 1 $\frac{1}{4}$ " deep		L	1100	730	535
Symbol, 3S					
Straight Bars,	1 $\frac{1}{4}" \times \frac{3}{16}"$	D	.11"	.152"	.206"
Reticuline "	1" $\times \frac{1}{8}"$	C	.0001	.00021	.00038
Grating, 1 $\frac{1}{2}$ " deep		L	1530	1100	775
Symbol, 4S					
Straight Bars,	1 $\frac{1}{2}" \times \frac{3}{16}"$	D	.089"	.132"	.173"
Reticuline "	1" $\times \frac{1}{8}"$	C	.000058	.00012	.00023
Grating, 1 $\frac{3}{4}$ " deep		L	2060	1435	1100
Symbol, 5S					
Straight Bars,	1 $\frac{3}{4}" \times \frac{3}{16}"$	D	.075"	.108"	.154"
Reticuline "	1" $\times \frac{1}{8}"$	C	.000036	.000075	.00014
Grating, 2" deep		L	2700	1875	1375
Symbol, 6S					
Straight Bars,	2" $\times \frac{3}{16}"$	D	.066"	.095"	.129"
Reticuline "	1" $\times \frac{1}{8}"$	C	.000025	.000051	.000094
Grating, 2 $\frac{1}{2}$ " deep		L	3460	2400	1765
Symbol, 7S					
Straight Bars,	2 $\frac{1}{4}" \times \frac{3}{16}"$	D	.06"	.085"	.116"
Reticuline "	1" $\times \frac{1}{8}"$	C	.000017	.000036	.000066

DEFLECTIONS—To obtain the deflection under any uniform load constant "C" from the above table for that span. The result will be the deflection in inches.

STANDARD

SPACING

TYPES "D" AND "G"—From center to center of straight bars, 1 inch center. Rivet spacing, 7 inches center to center along straight bars.

TYPE "E"—From center to center of straight bars, 1 $\frac{5}{16}$ inch—except spacing, 3 $\frac{1}{2}$ inches center to center along straight bars.

STANDARD UNIT

The standard unit in Irving Subway, in all three types, is 24 inches for gratings 1 $\frac{1}{2}$ inch and over. This standard is fixed not alone to simplify manufacturing but also to facilitate rearrangement for setting machinery or making repairs.

We can adapt our construction to meet any requirements of shape or **UNITS SMALLER THAN STANDARD**, the pro rata square foot price applicable, a small extra price is added.

Prices quoted always include one shop coat of paint.

INSTRUCTIONS FOR ORDERING

In ordering Irving Subway, designate by quantity, symbol, size and type.

Irving Iron Works, Long Island City, N. Y.

IRVING SUBWAY" TYPES

ches for load L

C=Deflection Constant (D÷L)

S P A N S I N F E E T								
	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	7'-0"	8'-0"	9'-0"
	97 .44" .00451							
	173 .329" .00190	138 .421" .00305	112 .521" 00465					
	410 .27" .00065	325 .343" .00105	265 .426" .0016	215 .506" .0024	185 .617" .0033	155 .958" .0062	100 1.05" .0105	80 1.35" .0169
	595 .226" .00038	470 .286" .00061	380 .353" .0009	315 .428" .0014	265 .510" .0019	195 .696" .0036	150 .913" .0061	115 1.121" .0097
	810 .194" .00024	635 .244" .00038	520 .304" .00058	425 .363" .00085	360 .436" .0012	265 .595" .0022	200 .766" .0038	160 .981" .0061
	1055 .169" .00016	830 .213" .00025	675 .264" .00039	560 .321" .00057	470 .381" .0008	345 518" .0015	265 .680" .0026	210 .863" .0041
	1550 .175" .00011	1065 .193" .00018	865 .237" .00027	715 .288" .0004	600 .342" 00057	440 .467" .0011	340 .609" .0018	265 771" .0029

square foot on a given span, multiply that load per square foot by the deflection inches at center of span.

ONSTRUCTION

ch—except for bars ¾ inch and 1 inch deep, where spacing is 1¼ inch center to

for bars ¾ inch and 1 inch deep, where spacing is 1¼ inch center to center. Rivet

and 6 feet long, for ¾ inch and 1 inch gratings; and 13½ inches wide and 6 feet long during and shipping, but also to facilitate installation and to make easy removal or

of area to be covered—usually with standard units. Where the conditions necessitate n these special panels. But where UNITS LARGER THAN STANDARD are

us:—"500 square feet 5S, Type G."

IRVING SAFETY WALKWAYS

FOR SHIPS, POWER STATIONS, INDUSTRIAL PLANTS, ETC.

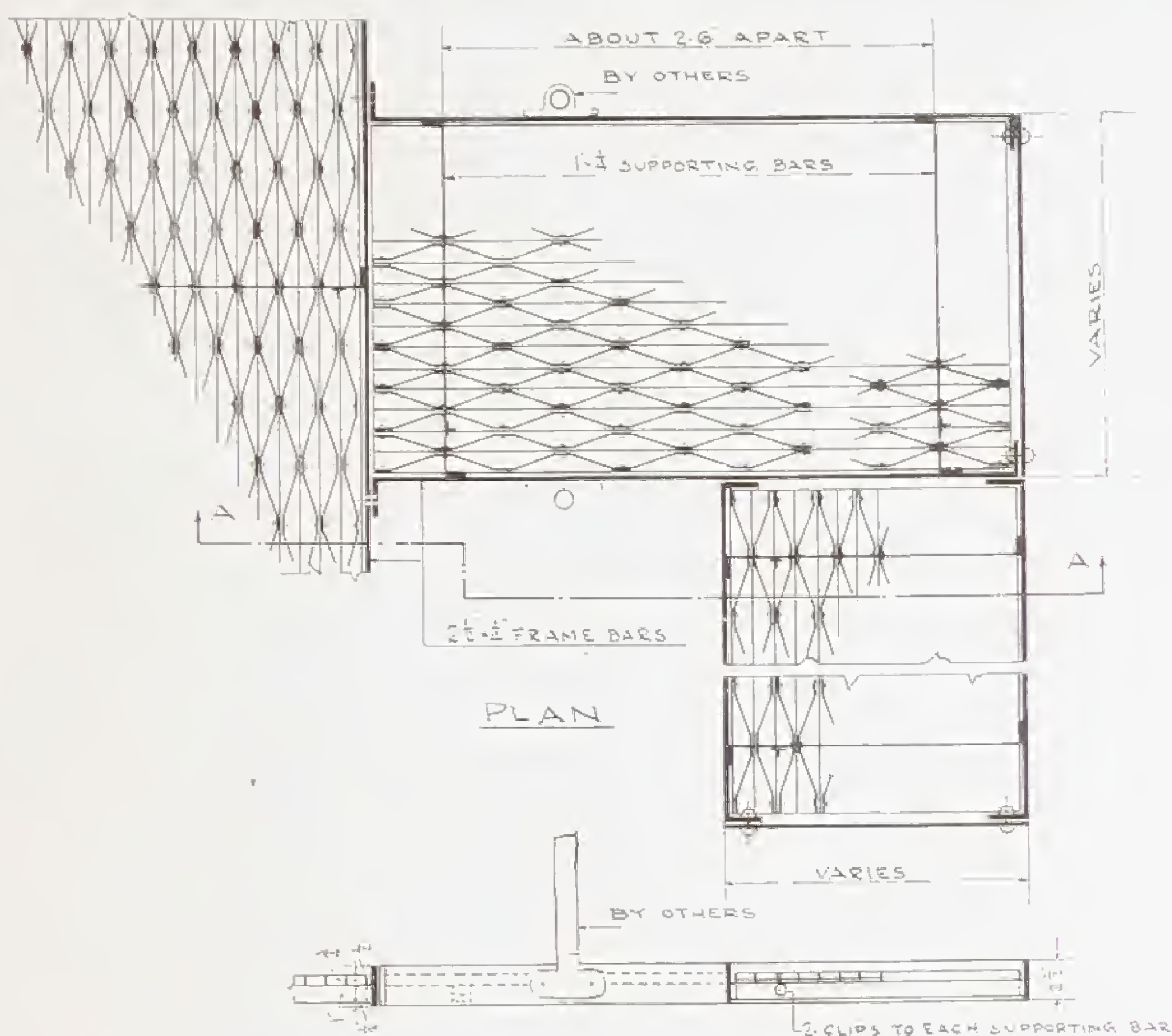
For elevated or suspended walkways, Irving Subway offers advantages found in no other grating or metallic flooring. Its non-slipping surface—not affected by oil or grease—gives a safe footing and a feeling of comfort and security in walking upon it.

Its great strength and rigidity coupled with its extreme light weight make installation easy and inexpensive because only the lightest supporting framework is needed. Usually a gallery or walkway of Irving Subway can be hung from or attached to the frame of an existing building without going beyond a safe load and without any reinforcement.

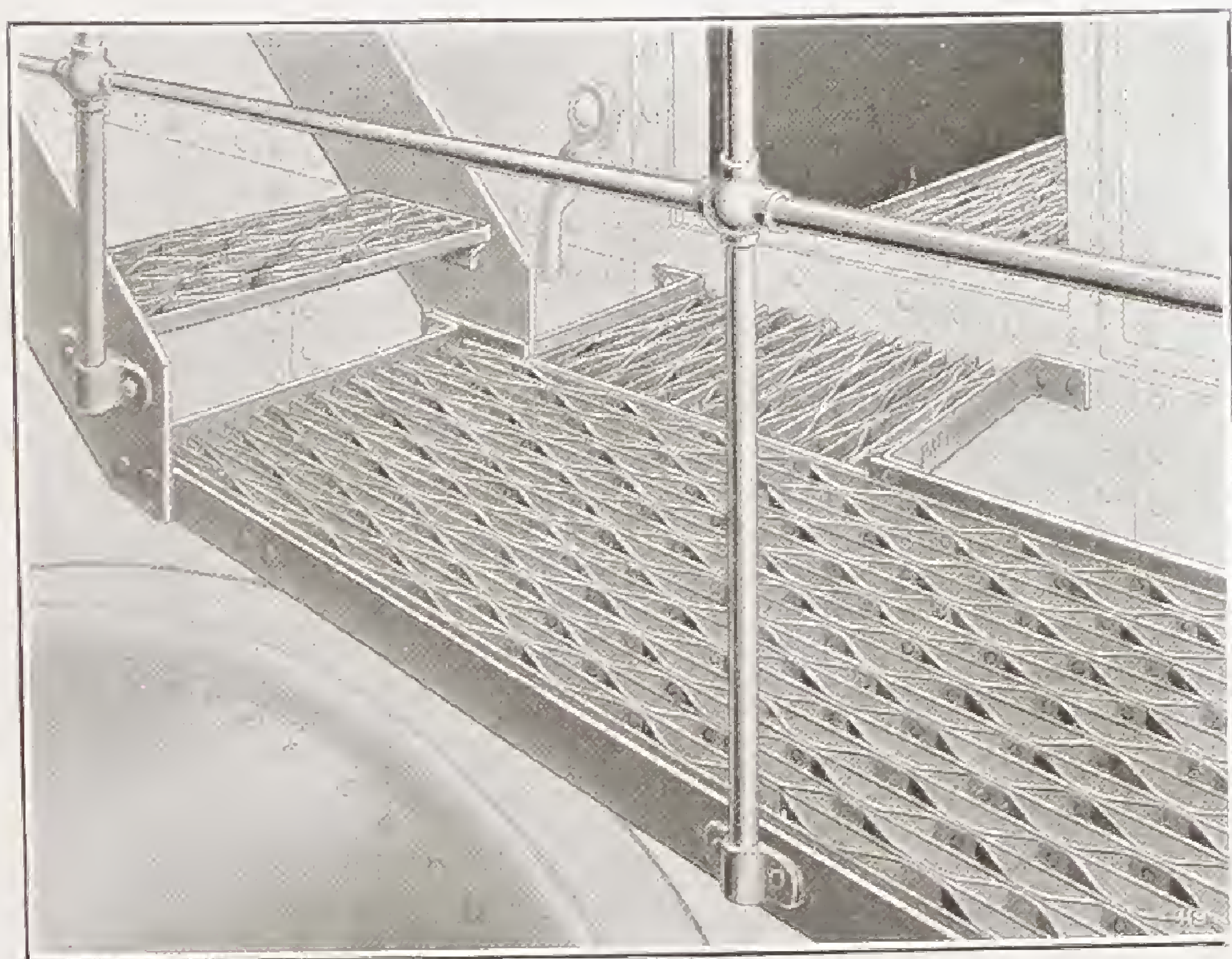
The large lighting area—80% of panel area—does not noticeably impair lighting conditions below. And the small mesh prevents any but the smallest objects falling through. Irving Walkways are clean and sanitary because they do not accumulate dirt.

The drawings on the opposite page give some construction details. Irving Walkways are made and assembled in complete units, ready for installation.

Irving Iron Works, Long Island City, N. Y.



NOTE:—Straight bars, $\frac{3}{4}$ " x $\frac{1}{8}$ "; reticuline bars, $\frac{1}{2}$ " x $\frac{1}{8}$ ". Walkways are delivered assembled complete in convenient units, including grating, side bars and supports, ready for erection. The gratings are always removable from their frames. Special allowances are provided on walkways for fitting on the job, when actual dimensions are doubtful. All positive connections and holes are provided.



A walkway and stairs of Irving Subway in the boiler room of a steamship.

IRVING SUBWAY FLOORING

FOR BOILER AND ENGINE ROOMS, IN
SHIPS, POWER STATIONS, IN-
DUSTRIAL PLANTS, ETC.

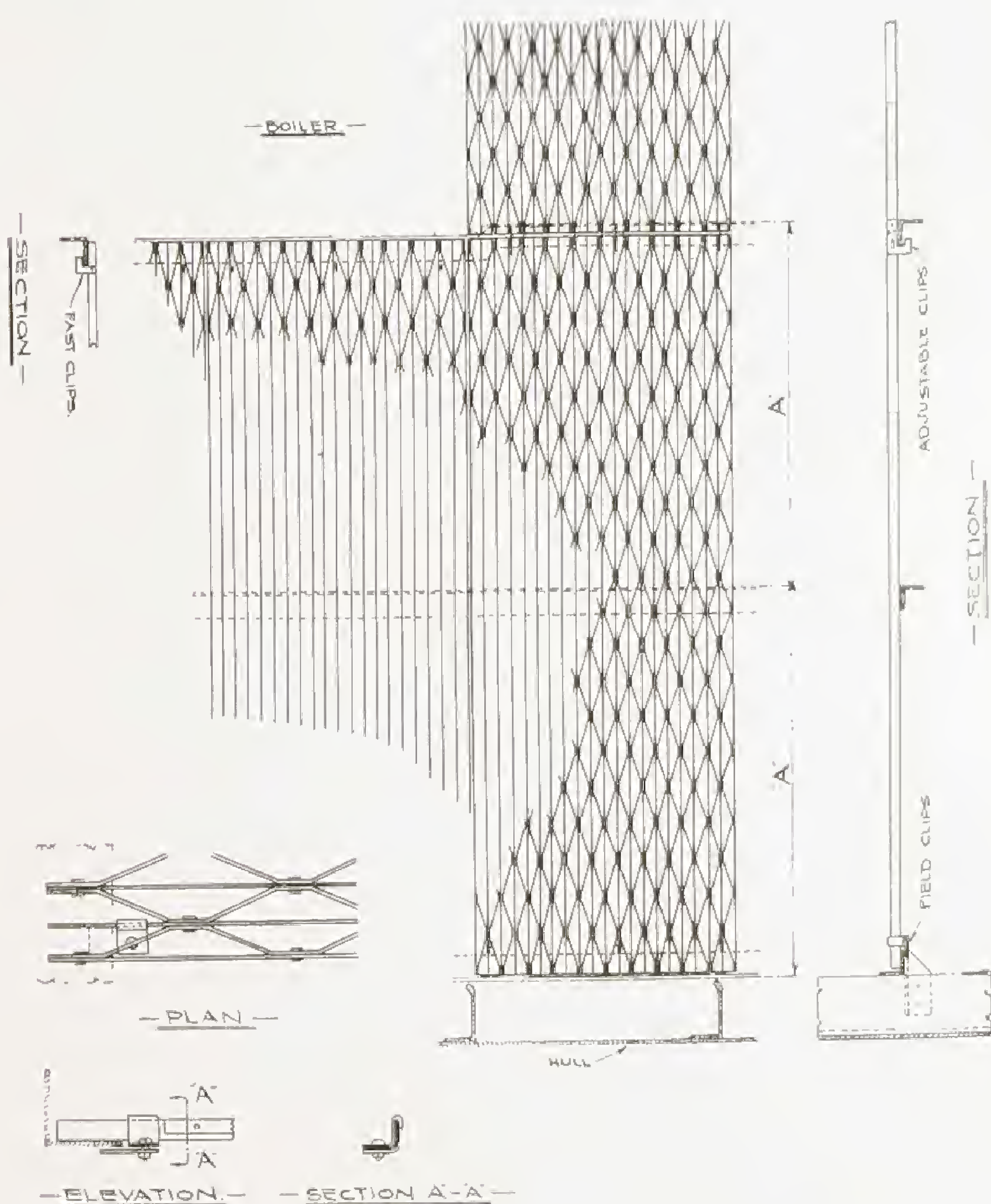
As a boiler room flooring in oil-fired power plants, Irving Subway stands supreme. Its non-slipping, non-oil-retaining surface gives the finest kind of a footing and means comfort for the boiler room force. (See illustration on page 17.)

Its 80% opening permits free circulation of air and keeps the boiler and engine room well ventilated and comfortable. Its light, sectional construction makes it easy to install. And wherever an opening is wanted later, a section can be removed. Or, if changes in arrangement are needed, they can easily be made at any time.

A combination of Irving Subway for flooring, Irving Walkway for galleries, and Irving Safety Stair Steps, gives the finest kind of an equipment for the up-to-date power plant or ship.

Construction details are shown on the opposite page.

Irving Iron Works, Long Island City, N. Y.



NOTE:—For $\frac{3}{4}$ " grating, span "A" not to exceed 3'; for 1" grating, span "A" not to exceed 4'. Grating flooring made up in units about 24" by 6', each unit provided with 6 adjustable clips as shown, making the units easily removable and taking supports as provided for common plate flooring. No drilling of supports necessary. Adjustable field clips provided for special fittings.



IRVING SAFETY STAIR STEPS

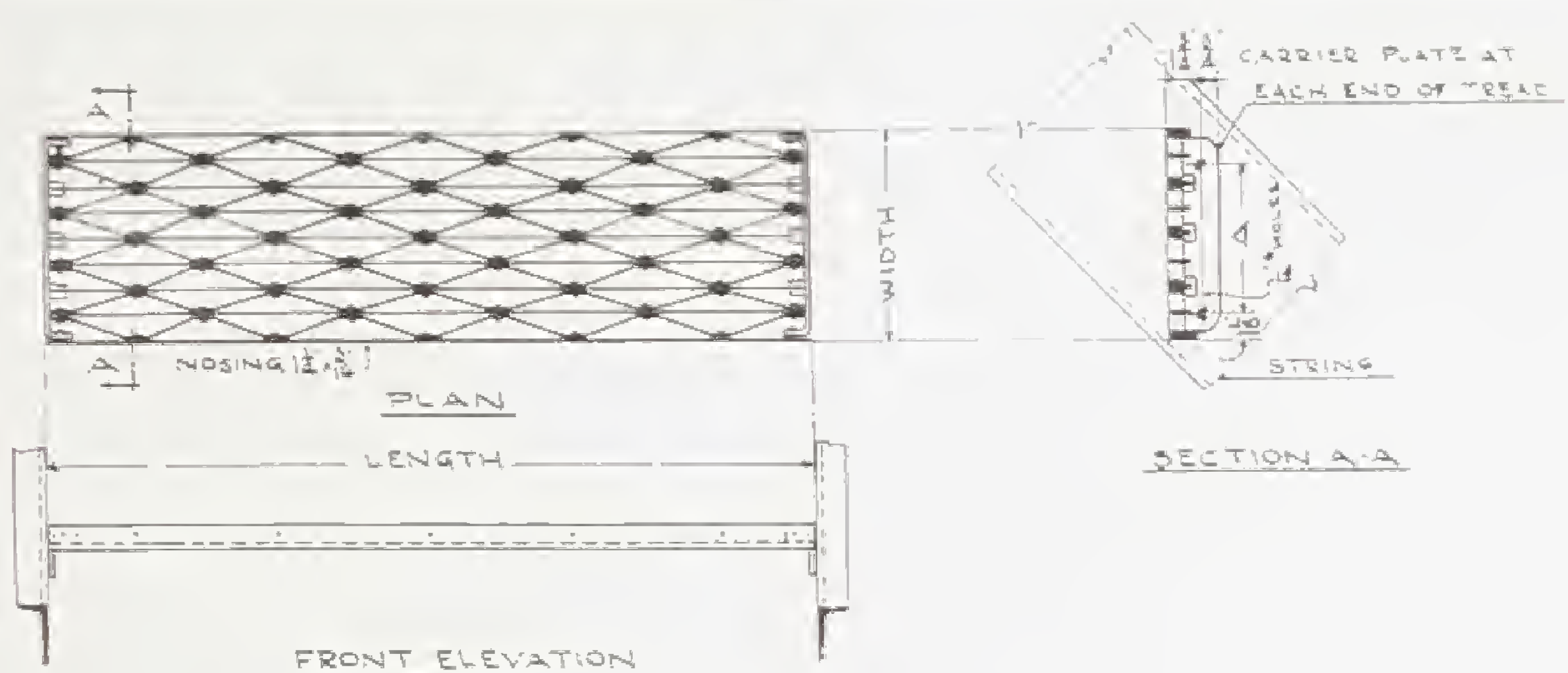
FOR INDUSTRIAL PLANTS, MARINE
EQUIPMENT, FIRE ESCAPES,
CAR STEPS, ETC.

Originally a special application of Irving Subway, these Safety Stair Steps have gained such popularity that they are now a standard product in the Irving line. Each step is a complete unit, with its own carriers, easily installed and more durable than any other step.

You never have to "watch your step" on a ladder or stairs with Irving Safety Steps. They are absolutely non-slipping, even with oil or grease upon them. When used out of doors they cannot accumulate snow or ice (as a solid step does)—give a secure footing even in freezing weather. They cannot fill up with dirt, and are clean and sanitary.

They're strong enough for any load that may come upon them—yet so light that they need only the lightest supports. Standard sizes, specifications, etc., are given on the opposite page.

Irving Iron Works, Long Island City, N. Y.

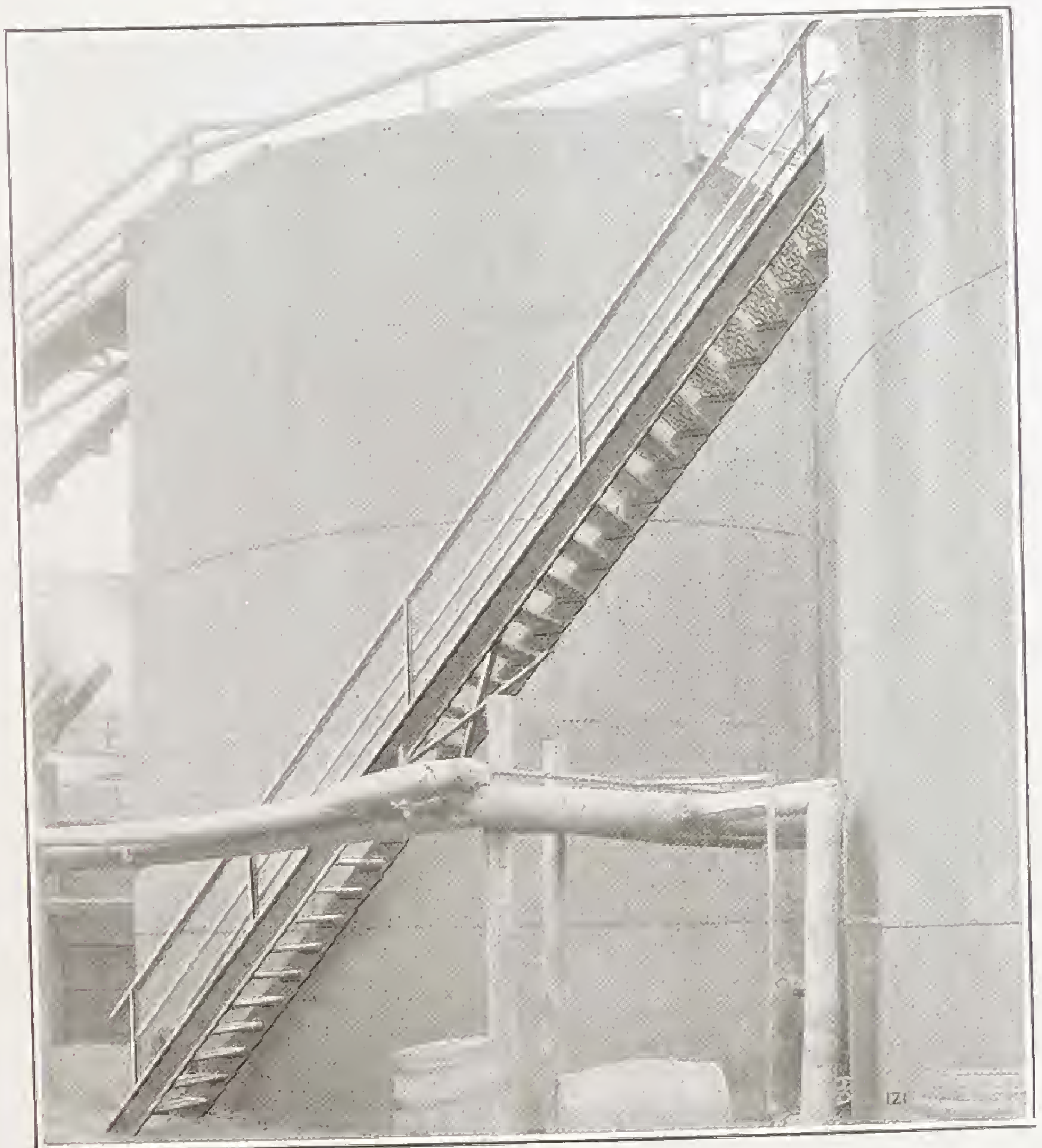


STANDARD SIZES

Complete units assembled, with punched carrier plates attached, ready for setting

Width	L E N G T H					Distance "A"
5 1/4"	1'-7"	1'-10 1/2"	2'-2"	2'-5 1/2"	3'-0 1/2"	2 1/2"
7 3/4"	1'-7"	1'-10 1/2"	2'-2"	2'-5 1/2"	3'-0 1/2"	4 1/2"
10 1/4"	1'-7"	1'-10 1/2"	2'-2"	2'-5 1/2"	3'-0 1/2"	7"
Speci- fica- tions	Straight bars		3/4" X 1 1/8"	1" X 1 1/8"		
	Reticuline bars		1 1/2" X 1 1/8"	3/4" X 1 1/8"		
	Front bar		1" X 1 1/8"	1 1/4" X 3/16"		
	Carrier bars		2 1/2" X 1 1/8"	2 1/2" X 1 1/8"		

Other types and sizes made to order for special conditions.



This stairway of Irving Subway is safe and non-slip-
ping in all kinds of weather.

IRVING SUBWAY

FOR SIDEWALK GRATINGS, GRATING
DOORS. AND AREA COVERS

Nothing so well meets the demands of this service as Irving Subway. It affords a comfortable non-slipping surface under all weather conditions—as illustrated on page 15. While affording 80% opening for lighting and ventilation, the individual openings are so small, and so shaped, that heels cannot get caught nor baby carriage wheels go through.

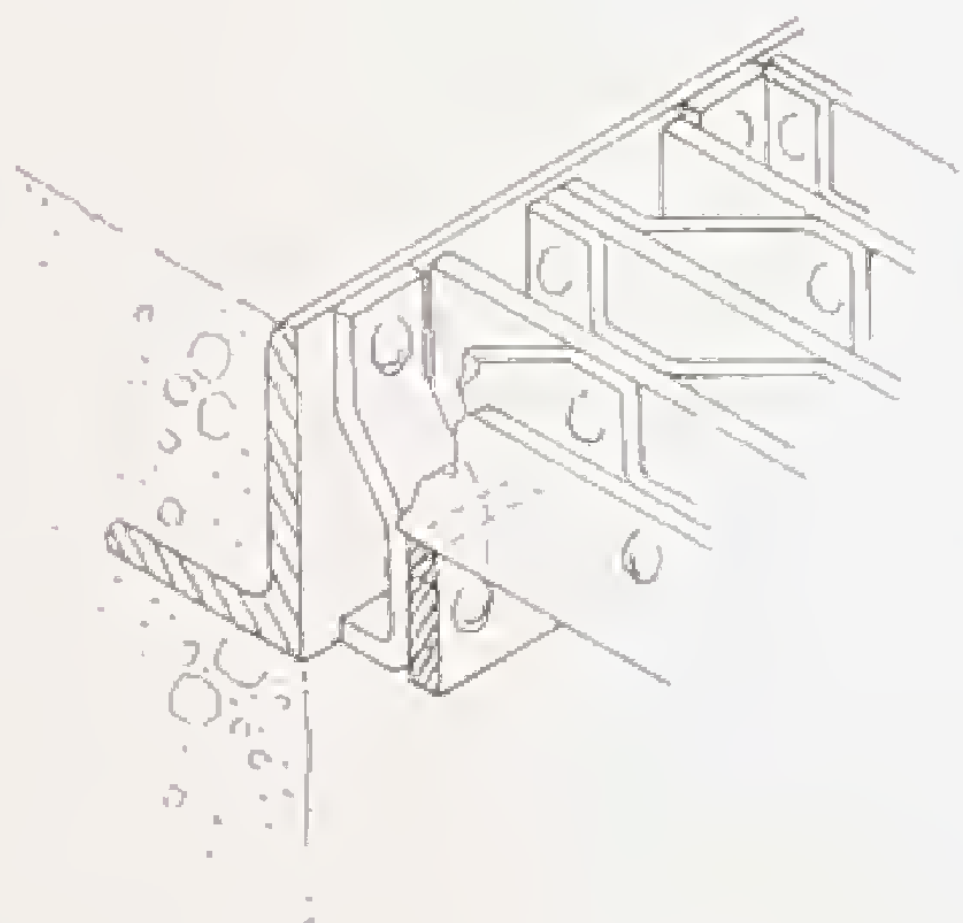
As to durability—Irving Subway in the busiest streets of New York shows no appreciable wear after years of traffic—no looseness, no rattling, no loss of non-slipping qualities.

As mounted with Irving patented flush hinges with special frame, it is a permanent structure with nothing whatever projecting above the sidewalk surface and with practically no ledges to catch dirt. It is sold preferably in complete units, including panels, hinges and frames.

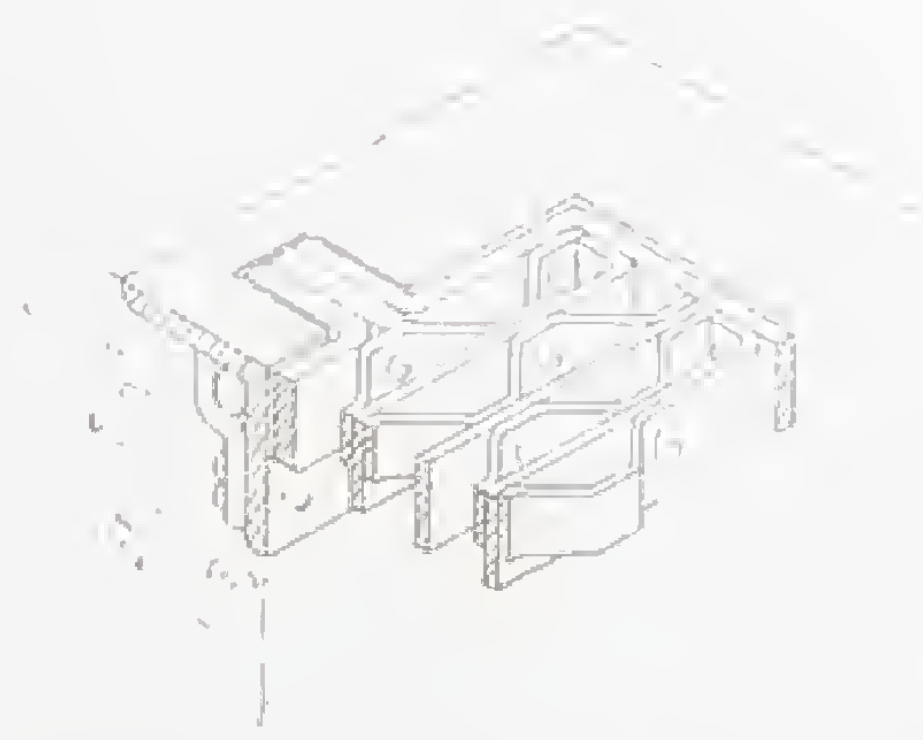
Irving Iron Works, Long Island City, N. Y.



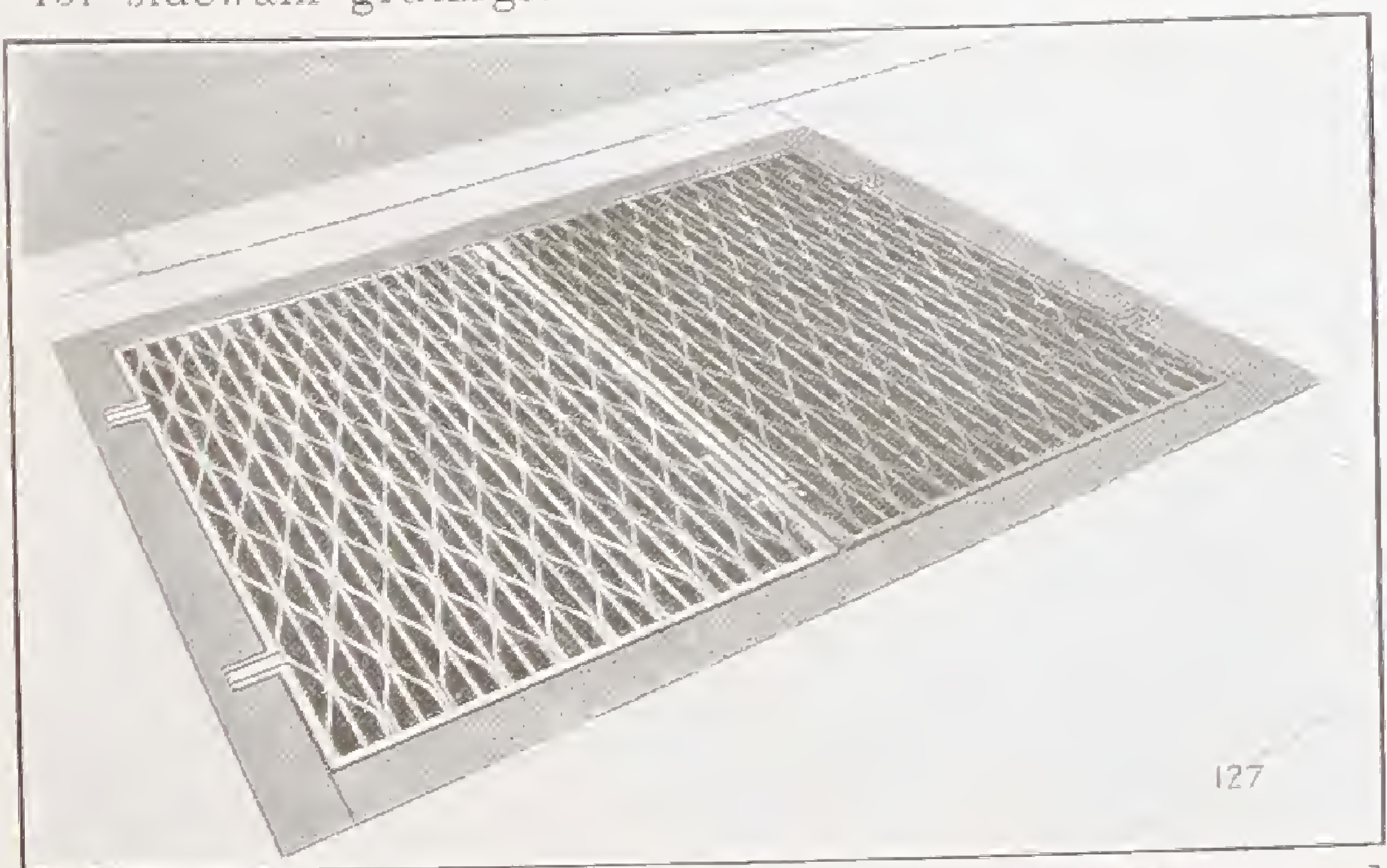
Irving Subway beside Hotel Manhattan, New York City: architecturally and mechanically right.



Irving patented non-dirt-collecting support for sidewalk gratings.



Irving patented flush hinge for sidewalk doors.



Sidewalk doors of Irving Subway, 42nd Street and Madison Avenue, New York: note absolutely flush surface.

IRVING SUBWAY FOR CONCRETE ARMORING

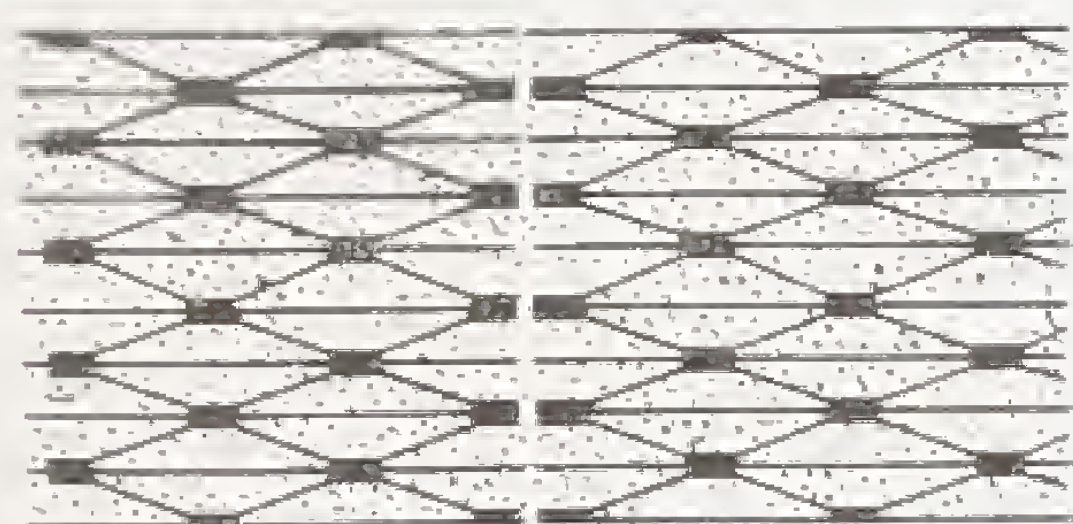
Out of an almost accidental use of Irving Subway for armoring the surface of concrete, has grown an important business in this special application. The advantages of Irving Subway for this purpose are so obvious as to need little explanation.

Panels of Irving Subway—usually $3/4$ inch in depth—are laid to cover the required area and embedded in the concrete floor which is trowelled flush with the grating surface. The result is a smooth concrete floor armored with steel bars.

Used for loading platforms in warehouses and factories—in freight yards and express stations—on wharfs and docks—in milk depots—in paper mills—where barrels, boxes, cans, etc., may be dropped or heavy trucks rolled—Irving Subway adds immeasurably to the life of the concrete surface, by taking the shocks which would otherwise shatter the concrete surface. It makes the surface non-slipping and more comfortable—and there are no unsightly repair patches with the passing of time.

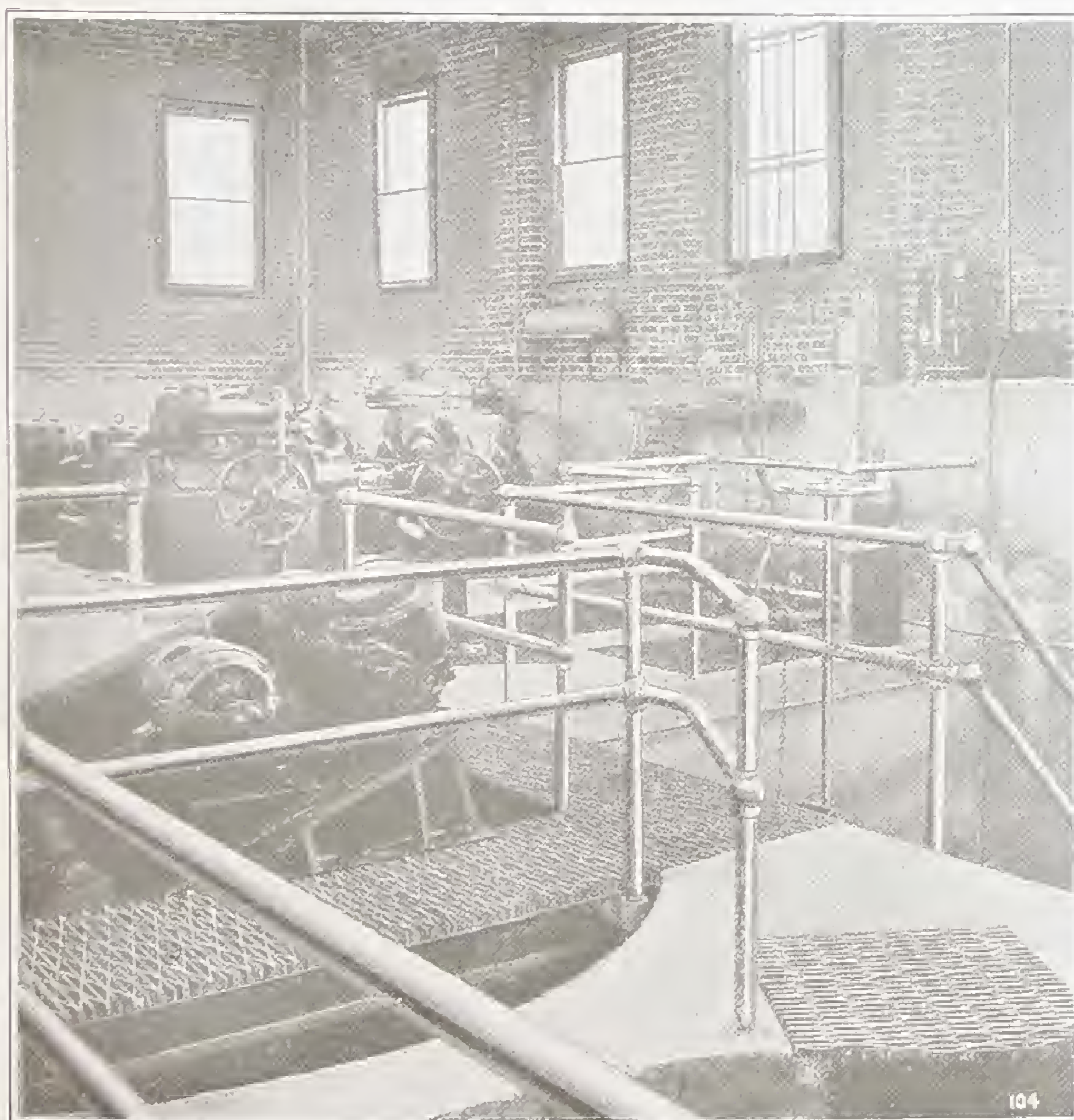
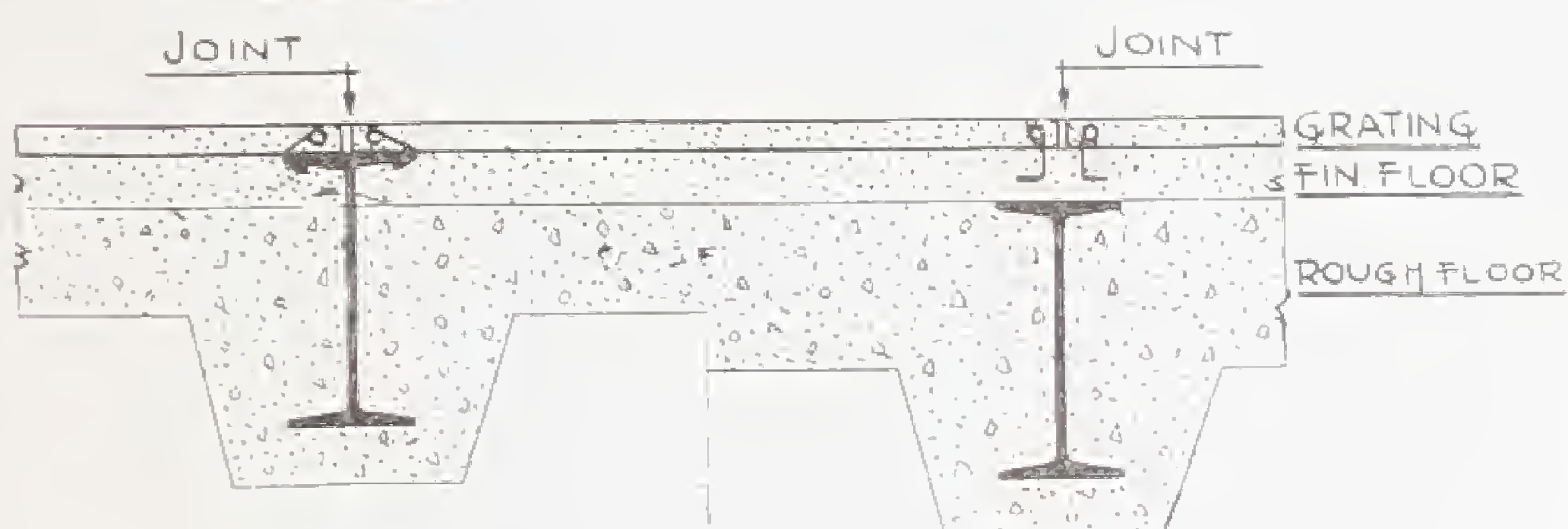
Some details are shown on the opposite page.

Irving Iron Works, Long Island City, N. Y.



CEMENT FLOOR FLUSH WITH
TOP OF GRATING

PLAN



Could anything so well serve the purpose as Irving Subway, in this engine room?

IRVING STORAGE RACKS

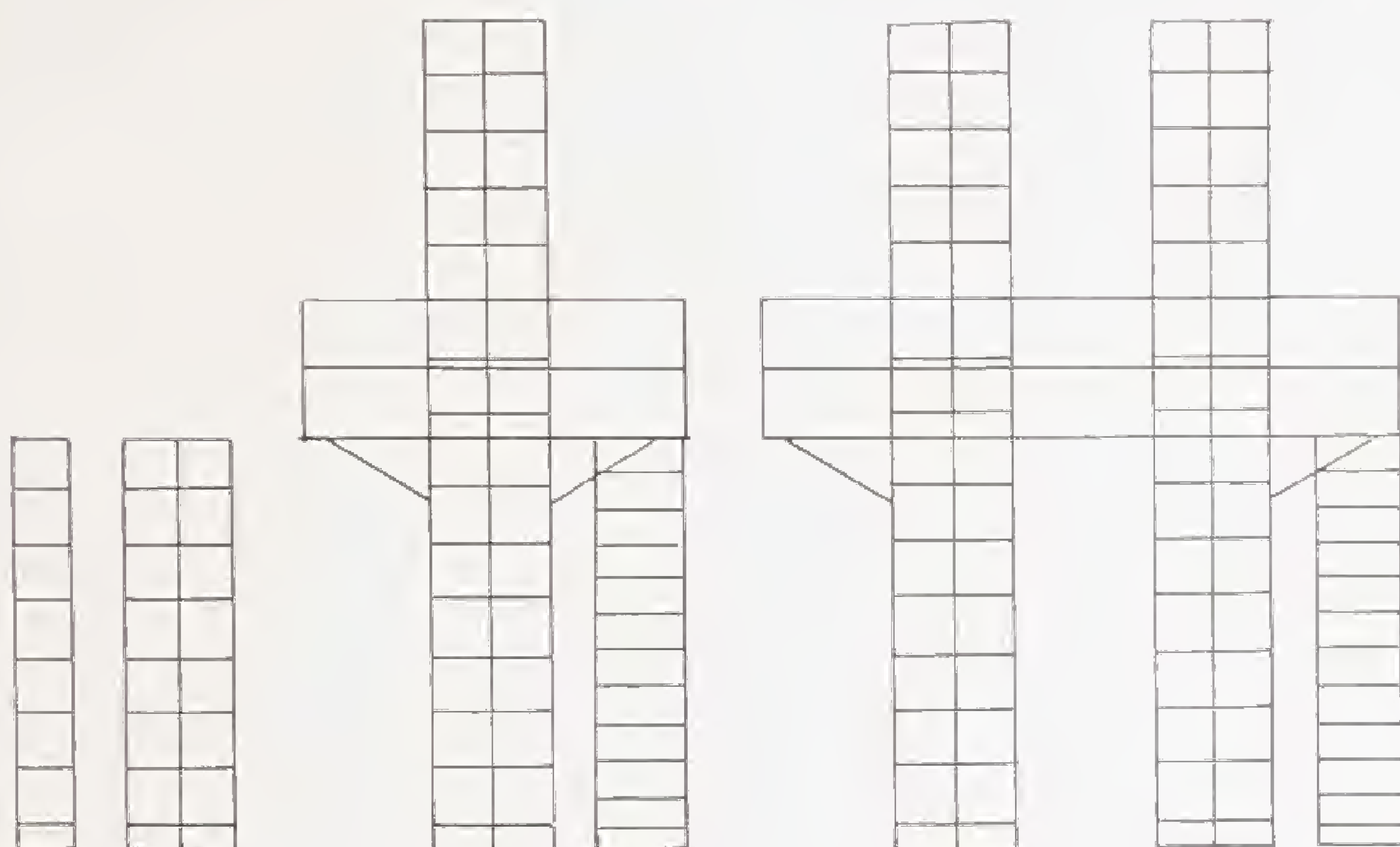
FOR OFFICES, FACTORIES, WAREHOUSES,
SHOW ROOMS, ETC.

For storage racks for any purpose, Irving Subway offers advantages found in no other type of metallic shelving. Its extremely light weight for the load carried makes lighter, less costly supporting framework possible. It affords no lodgement for dust or dirt—is clean and sanitary. It permits free circulation of air where this is desirable. It is fireproof, depreciation-proof, and can be rearranged as often as desired. It is made in units of convenient size and can be assembled in stacks of any size, width and capacity desired, with the least possible trouble.

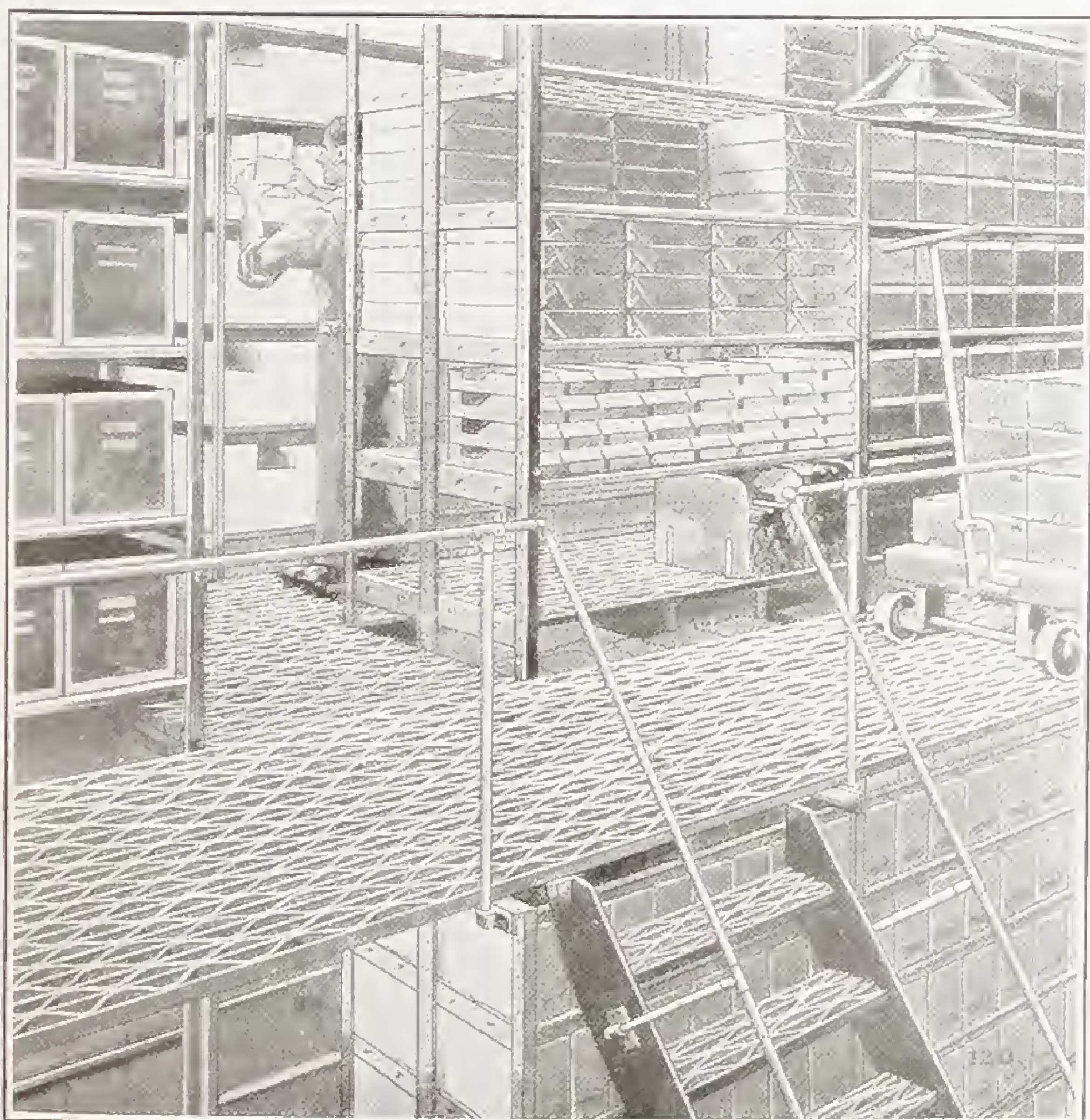
The illustration shows a combination of Irving Storage Rack Shelving, Irving Walkway for the galleries, and Irving Safety Stair Steps. On the opposite page are sketches showing various assemblies of standard Irving Units.

Correspondence on this specialty is invited, and quotations will be made based on the most economical size of standard units for the loads and spans and service required.

Irving Iron Works, Long Island City, N. Y.



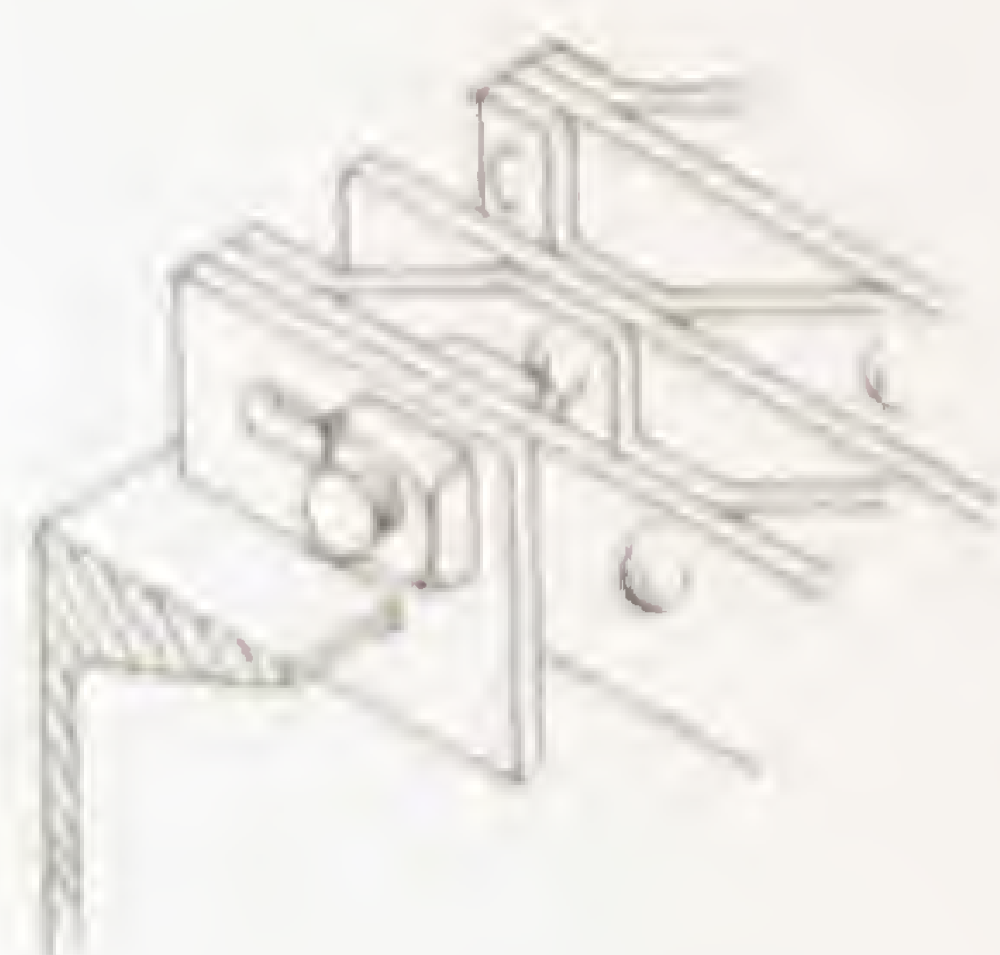
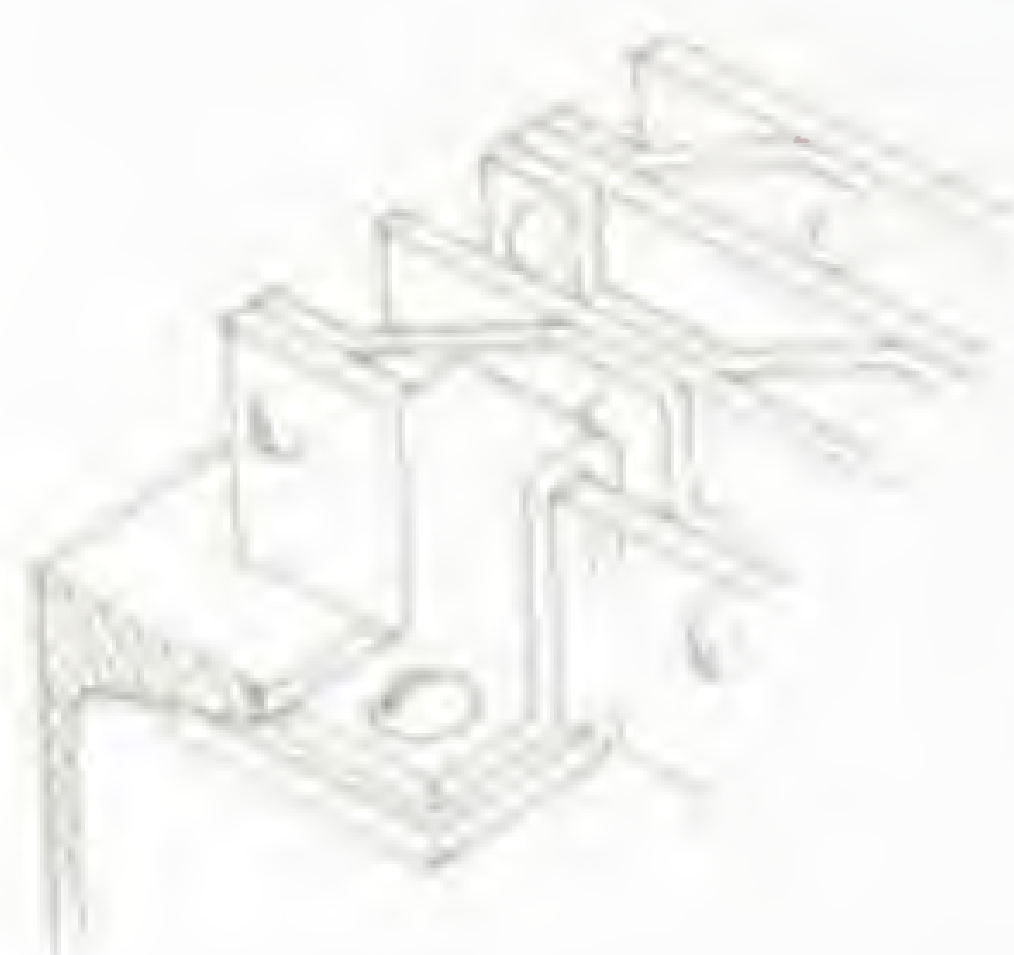
Diagrams showing possible arrangements of Irving Shelving, Walkway and Stair Steps—for storage racks, stock rooms, etc.



Irving Storage Rack Shelving in combination with Irving Walkway for galleries and Irving Safety Stair Steps.

Irving Iron Works, Long Island City, N. Y.

IRVING PATENTED SUBWAY FASTENERS



These, and other Irving Fasteners not here shown, provide methods of securing Irving Subway to *every type* of construction.

SOME TESTS OF IRVING SUBWAY

On the next two pages are graphic presentations of the results of some tests on Irving Subway made in the laboratories of Rensselaer Polytechnic Institute. The figures demonstrate conclusively that the safe load ratings tabulated on pages 18 and 19 provide a factor of safety which could be exceeded only under the most extreme conditions of service.

The illustration inset on page 35—one of the panels used in the tests above referred to—shows conclusively how a load concentrated at one point (indicated by the arrow) is distributed over the panel area by means of the truss action of the reticuline bars. No other type of grating or grating-flooring has this important feature of load distribution.

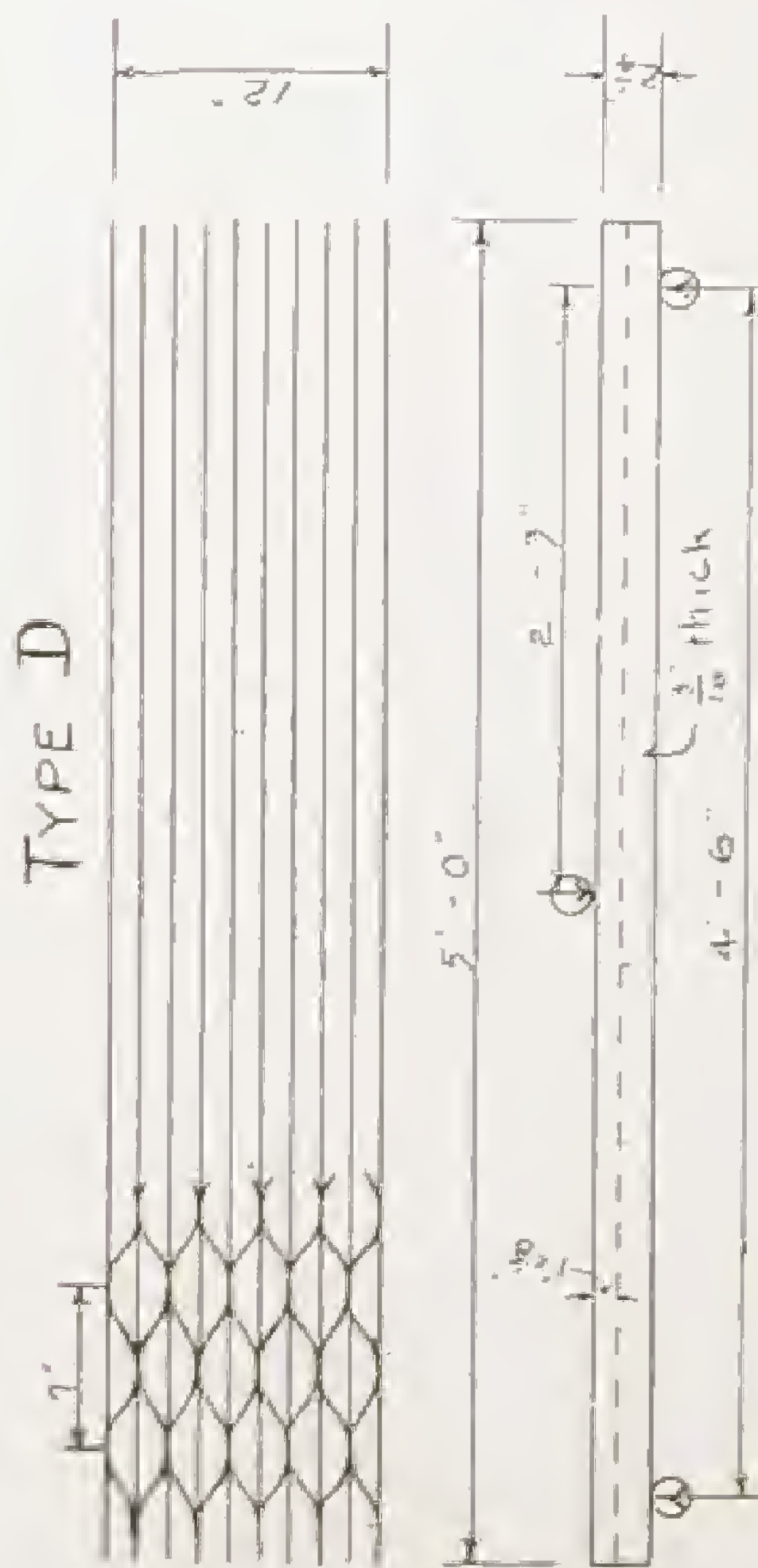
SPECIAL TEST REPORT.

For Irving Iron Works Co., New York
Material Irving Subway Grating submitted by Irving Iron Works Co.
Type "D"

Nov. 5 1915

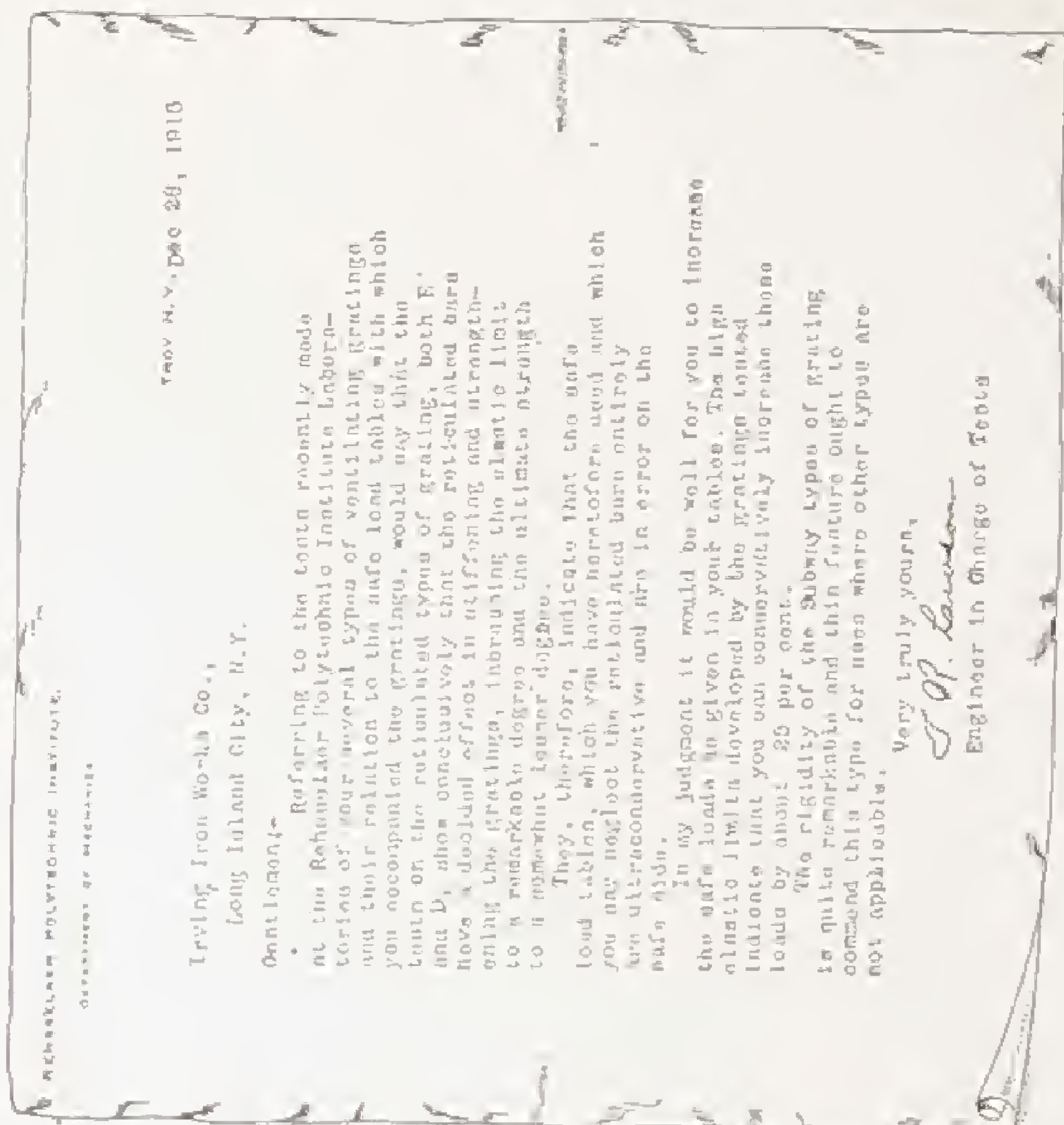
E.B. Fox

ENGINEER IN CHARGE OF TESTS.



Load	Defl
000	0.00
500	0.07
1000	0.14
1600	0.21
2000	0.25
2500	0.31
3000	0.37
3500	0.43
4000	0.49
4500	0.55
5000	0.61
5500	0.67
5800	0.70
6000	0.73
6500	0.77
7000	0.81
7500	0.85
8000	0.89
8500	0.93
8800	0.96
Ult.	0.98

TYPE D



TROY N. Y., DEC 28, 1915

Irving Iron Works Co.,
Long Island City, N. Y.

Gentlemen:-

Referring to the tests recently made at the Rensselaer Polytechnic Institute Laboratories of four several types of ventilating gratings and their relation to the safe load tabled with which you accompanied the gratings, would say that the tests on the reticulated type of grating, both E and D, show conclusively that the reticulated bars have a decided effect in stiffening and strengthening the gratings, increasing the ultimate limit to a marked degree and the ultimate strength to a somewhat lesser degree.

They, therefore, indicate that the safe load tabled, which you have heretofore used and which you may neglect the reticulated bars entirely an ultraconservative and are in error on the safe side.

In my judgment it would be well for you to increase the safe loads in given in your tables. The high elastic limit developed by the gratings tested indicates that you can conservatively increase these loads by about 25 per cent.

The rigidity of the Subway type of grating is quite remarkable and this feature ought to command this type for uses where other types are not applicable.

Very truly yours,

E. B. Fox

Engineer in Charge of Tests

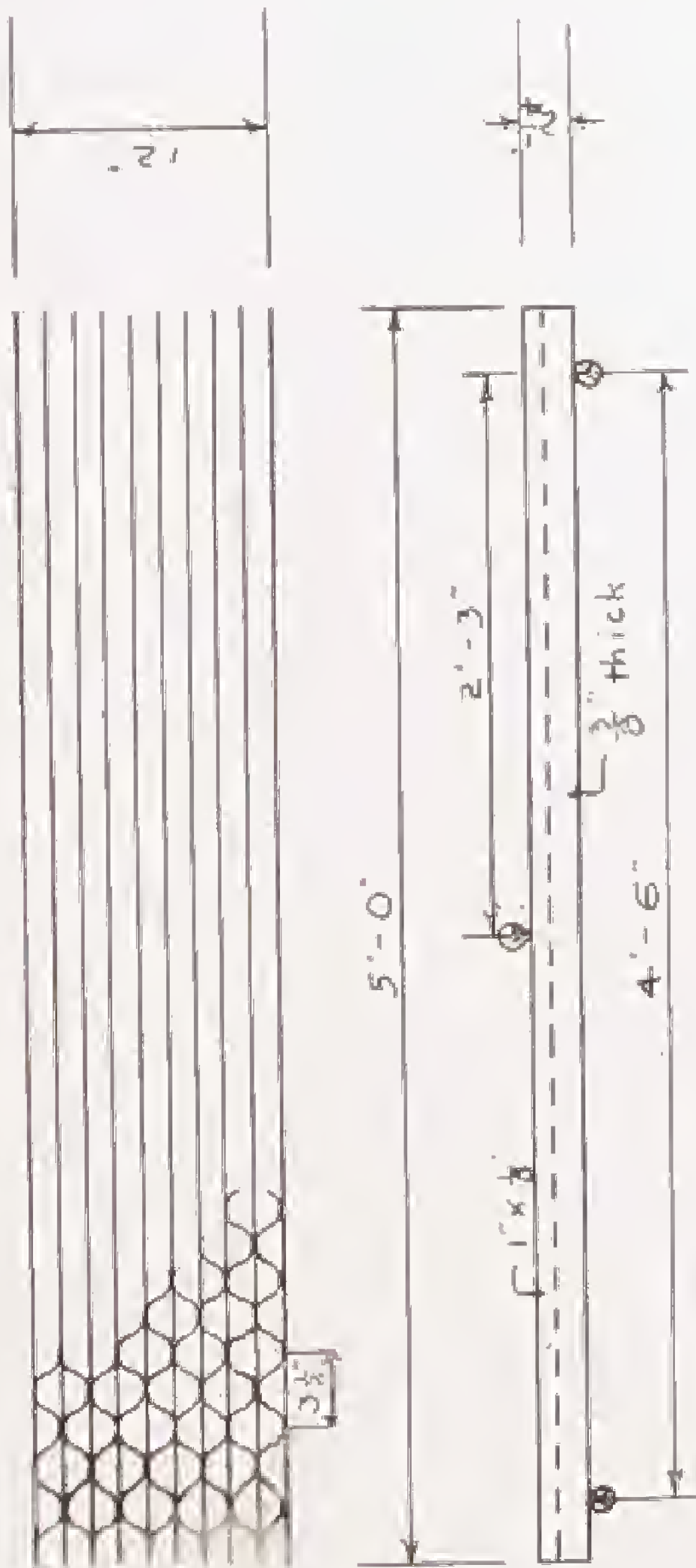
Deflections

SPECIAL TEST REPORT.

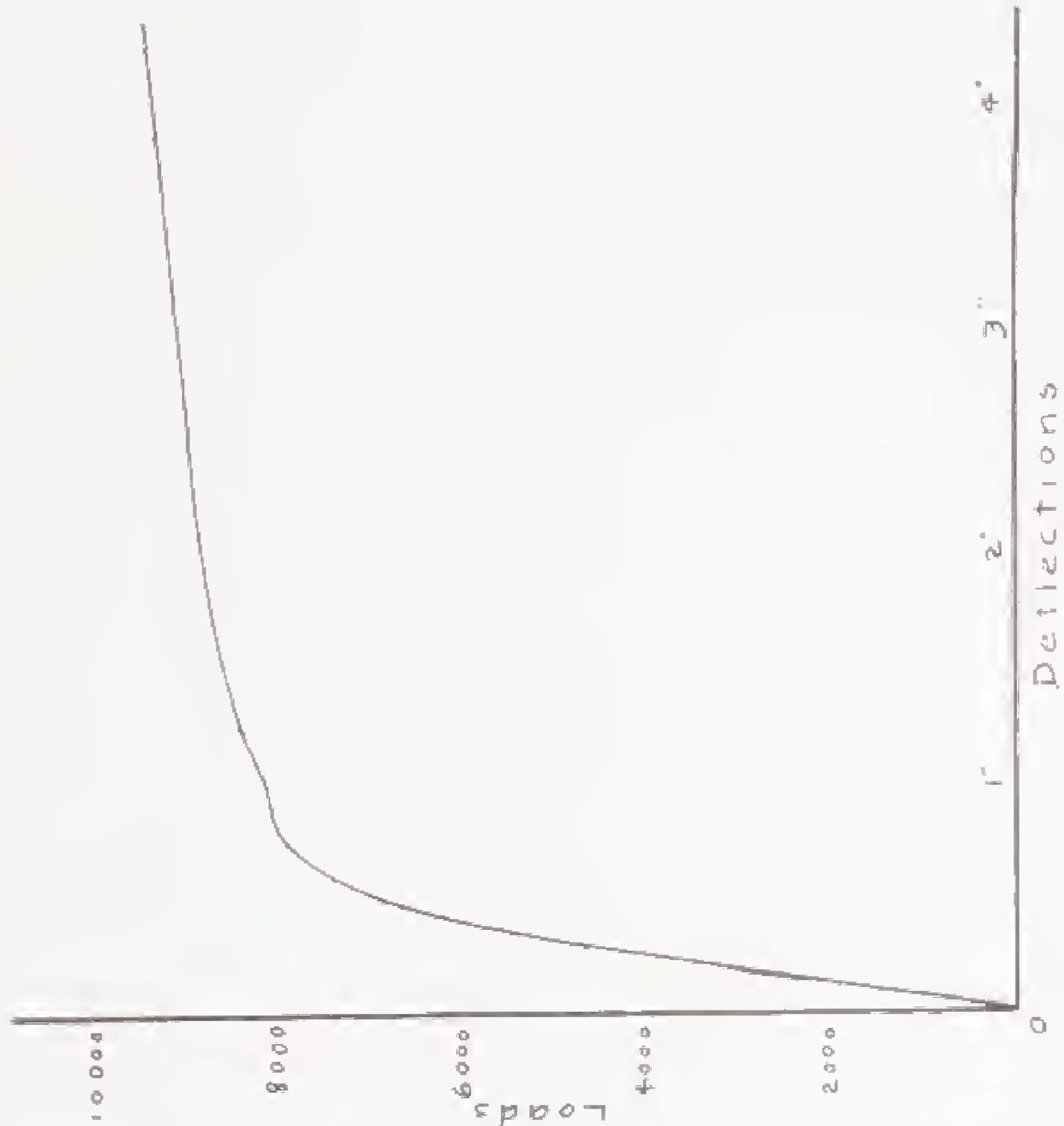
For Irving Iron Works Co. New York
Material Irving Subway Grating Submitted by Irving Iron Works Co.

Nov. 13 1915
Emory B. Fox
ENGINEER IN CHARGE OF TESTS.

TYPE E



Load	Defl
000	000
500	.072
1000	.061
1600	.098
2000	.128
2500	.162
3000	.203
3500	.237
4000	.272
4500	.308
5000	.342
5500	.383
5800	.405
6000	.421
6500	.452
7000	.510
7500	.603
8000	.786
8160	.922
8500	1.272
8540	1.418
8800	2.068
9000	2.628
9500	Ult 4.728



Irving Iron Works, Long Island City, N. Y.

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